



1st International Conference on Pharmacy Practice | 2018

**Embracing Smart Partnership:
Driving Innovation Into Practice**

27 - 28 JUNE 2018

CONCORDE HOTEL, SHAH ALAM, MALAYSIA

Compendium of Abstracts

Organised by:

**FACULTY of
PHARMACY**



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DAY 1, 27 JUNE 2018, WEDNESDAY

PARALLEL SESSION I

PHARMACY PRACTICE

Venue: Concorde I, Level 2

Chairperson: **Assoc. Prof. Dr. A'edah Abu Bakar**

INVITED SPEAKER I (14.30 – 15.00)

ETHICAL CONSIDERATIONS IN PHARMACY PRACTICE RESEARCH

Dr. Yogheswaran Gopalan, Senior Lecturer, Department of Pharmacy Practice, Faculty Of Pharmacy, Universiti Teknologi MARA, Selangor, Malaysia.

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PHARMACEUTICS AND LIFE SCIENCES

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MICROWAVE AS FUTURE SKIN PENETRATION ENHANCER IN DRUG DELIVERY

Prof. Dr. Wong Tin Wui, Research fellow of Integrative Pharmacogenomics Institute (iPROMISE), Faculty of Pharmacy, Universiti Teknologi MARA, Selangor, Malaysia.

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RECENT ADVANCES IN THE MANAGEMENT OF GLAUCOMA

Assoc. Prof. Dr. Renu Agarwal, Pharmacologist, Faculty of Medicine, Universiti Teknologi MARA

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INVITED SPEAKER IV (14.30 – 15.00)

THE CONTRIBUTION OF COMPLEMENTARY AND ALTERNATIVE MEDICINE TO SUSTAINABLE HEALTH CARE

Dr. Maryam Farooqui, Assistant Professor, Head of Pharmacy Practice, Unaizah College of Pharmacy, Qassim University, Saudi Arabia.

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INVITED SPEAKER V (14.30 – 15.00)

PROBIOTICS AND GUT REVIVAL: IT IS ALL ABOUT BALANCE

Assoc. Prof. Dr. Kalavathy Ramasamy, Microbiologists, Department of Pharmaceutical Life Sciences & Head of the Collaborative Drug Discovery Research (CDDR) Group, Faculty of Pharmacy, Universiti Teknologi MARA, Selangor, Malaysia.

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Mr Nazri Nordin, Consultant Pharmacist, Farmasi Nazri, Penang, Malaysia

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Foreword from the Vice Chancellor UiTM



I would like to commend the Faculty of Pharmacy for their continuous efforts to engage in highly impactful research, as is evidenced from the organisation of the 1st International Conference on Pharmacy Practice (iCoPP). iCoPP 2018 will provide an exciting opportunity for researchers, educators and practitioners alike to debate, discuss and deliberate on pharmacy practice. I urge all researchers and other professionals to use this opportunity to address crucial aspects for consideration when engaging in multidisciplinary research.

The theme of this conference “Embracing Smart Partnership: Driving Innovation into Practice” aims to highlight recent initiatives that have transpired within pharmacy practice and with other disciplines. This will be an excellent platform for local and international academicians, pharmacists, healthcare professionals, government officials, policy makers and students to disseminate their research findings and share insights on pharmacy practice.

I would like to record my appreciation to all sponsors, local and international speakers as well as presenters, and exhibitors who have jointly collaborated in ensuring the smooth implementation of this inaugural international conference.

I wish everyone a fruitful and successful time at this conference.

Emeritus Professor Dato' Dr. Hassan Said
Universiti Teknologi MARA

Welcome Message



In the name of Allah, the Beneficent, the Merciful

I am pleased to welcome all of you to this landmark conference, the 1st International Conference on Pharmacy Practice (iCoPP 2018).

As research forms an important link between universities and healthcare institutes, this conference aims to strengthen this link and provide a platform for interdisciplinary networking.

Today, we have local and international delegates of various backgrounds (professors, lecturers, hospital pharmacists, community pharmacists, and students) and this therefore makes it an opportune time to renew contacts and discuss issues of mutual interest. Through this conference, we would like to engage with all of you in an open and constructive dialogue about research ideas, best teaching practices and pharmacy services. Indeed, the diverse background as well as the in-depth knowledge and rich experience of speakers and participants are salient elements to look forward to in the pursuance of excellence in research on pharmaceutical science and pharmacy practice.

Last but not least, congratulations to the organising committee for a job well done. To international delegates, welcome to Malaysia, and may your visit here be enjoyable and fruitful.

Professor Dr. Aishah Adam
Dean Faculty of Pharmacy

Message from the Chairperson



On behalf of the organising committee, I would like to extend a warm welcome to all the distinguished speakers and delegates of the 1st International Conference of Pharmacy Practice. The theme of this conference “Embracing Smart Partnership: Driving Innovation into Practice” signifies the importance of forming collaboration between various disciplines to enhance pharmacy practice.

We have lined up interesting topics fostering on collaborative efforts and innovations in clinical pharmacy, pharmacy practice, pharmacy education and public health. We have also included a qualitative research workshop to allow participants to learn new research techniques. This conference also gives the opportunity to delegates from different disciplines such as pharmacy practice, pharmacology, chemistry, pharmaceuticals and life sciences to share their research findings. We hope this conference will be an excellent platform to gain knowledge, exchange ideas and to network with researchers, scholars and practitioners.

I would like to take this opportunity to express my gratitude to Professor Dr. Aishah Adam, the dean of Faculty of Pharmacy, Universiti Teknologi MARA and the organising committee for their hard work, support and dedication to ensure the success of this conference.

We hope you will have an enjoyable, rewarding and fruitful conference.

Dr. Shubashini Gnanasan
Universiti Teknologi MARA

Programme

DAY 1	27 JUNE 2018 (WEDNESDAY)	
7.30 - 8.30	Registration and arrival of delegates, speakers and VIPs	
Venue: Concorde I 8.30- 9.00	Welcoming Ceremony National Anthem "Negaraku" and Doa recital Welcome speech: Organising Chairman - Dr. ShubashiniGnanasan Dean Faculty of Pharmacy UiTM - Y. Bhg. Prof. Dr. Aishah Adam	
Concorde I 9.00 - 9.30	Plenary lecture 1: <i>Improving Cardiovascular Disease Management Through Multidisciplinary Team: Role and Opportunity for Pharmacist</i> Assoc. Prof. SurakitNathisuwan	
9.30- 10.00	Plenary lecture 2: <i>Contribution of Social Pharmacy Field in Enhancing QUM and population health</i> Prof. Mohamed AzmiHassali	
10.00-10.30	Plenary lecture 3: <i>Development of appropriate medicines for children: Application of clinical pharmacy and pharmaceutical science</i> Prof. Ian Chi Kei Wong	
10.30- 11.00	Group photo session & tea break	
11.00 - 13.00	PARALLEL SYMPOSIUMS (You may attend any one of the following 2 symposiums)	
Symposium 1: <i>Innovations in pharmacy practice</i> Venue: Concorde 1 <i>Significance of phytochemistry, herbovigilance and outcome research in pharmacy practice</i> Prof. Ramesh. K. Goyal <i>Driving innovations in clinical genomics to enhance pharmacy practice</i> Prof. Teh Lay Kek <i>Automation of Total Parenteral Nutrition</i> Mrs. HarbansDhillon	Symposium 2: <i>Caring for the older people: collaborative efforts and innovations</i> Venue: Grand Patio Collaborative effort in caring for the older people Dr. Alan Ch'ngSwee Hock <i>Finding the IKIGAI of a Clinical Pharmacist: the art of integrating our profession into the community</i> Ms. Chen Li Li <i>Strategies in managing patients with dementia</i> Ms. Rosmaliah Alias	

DAY 1	27 JUNE 2018 (WEDNESDAY)	
13.00 - 14.30	Lunch talk and poster viewing (14.00-14.30)	
14.30 - 17.30	PARALLEL ORAL PRESENTATIONS (You may attend any one of the following 3 sessions)	
Concorde I 14.30-15.00	Session 1:Pharmacy Practice Invited Speaker <i>Ethical considerations in pharmacy practice research</i> Dr. YogheswaranGopalan	
15.00-17.00	15.00-15.15 OPP1 15.15-15.30 OPP2 15.30-15.45 OPP3 15.45-16.00 OPP4 16.00-16.15 OPP5 16.15-16.30 OPP6 16.30-16.45 OPP7	
Grand Patio 14.30-15.00	Session 2: Pharmaceutics & Life Sciences Invited Speaker <i>Microwave as future skin penetration enhancer in drug delivery</i> Prof. Dr. Wong Tin Wui	

15.00-17.00	15.00-15.15 OPL1 15.15-15.30 OPL2 15.30-15.45 OPL3 15.45-16.00 OPL4 16.00-16.15 OPL5 16.15-16.30 OPL6 16.30-16.45 OPL7 16:45-17.00 OPL8
Patio I	Session 3: Pharmacology & Chemistry
14.30-15.00	Invited Speaker Recent advances in the management of glaucoma Assoc. Prof. Dr. Renu Agarwal
15.00-17.00	15.00-15.15 OPC1 15.15-15.30 OPC2 15.30-15.45 OPC3 15.45-16.00 OPC4 16.00-16.15 OPC5 16.15-16.30 OPC6 16.30-16.45 OPC7
17.00	Tea break
19.30-22.00	Welcoming dinner Venue: Hotel Concorde, Shah Alam

DAY 2	28 JUNE 2018 (THURSDAY)	
Concorde I 8.30 - 9.00	Plenary lecture 4: <i>Collaborative efforts in transforming pharmacy education beyond borders</i> Prof. Claire Anderson	
9.00 - 9.30	Plenary lecture 5: <i>Recent advances in public health research</i> Prof. PraneeLiamputtong	
9.30- 10.00	Plenary lecture 6: <i>Public-Private Partnership in the management of tuberculosis in Malaysia</i> Prof. Dato Dr. Hj Abdul Razak Abdul Muttalif	
10.00 - 10.30	Tea break and poster viewing	
10.30-13.00	PARALLEL SYMPOSIUMS (You may attend any one of the following two symposiums)	
10.30 – 13.00	Symposium 3: Qualitative Research Workshop Venue: Concorde 1 <i>Innovative approaches in qualitative research</i> Prof. Claire Anderson <i>Community-Based Participatory Action Research and its essence in public health</i> Prof. PraneeLiamputtong	Symposium 4: Innovations in clinical pharmacy Venue: Grand Patio <i>Establishment of USM Tobacco Quitline Service for smoking cessation</i> Dr. BalamuruganTangiisuran Innovative approaches in caring for renal patients Dr. Norkasih Ibrahim <i>Hacking health: the power of small well coordinated group in optimizing healthcare</i> Mr. MohdGhazali Ismail
13.00 - 14.30	Lunch talk and poster viewing (14.00-14.30)	
14.30 – 17.00	PARALLEL ORAL PRESENTATIONS (You may attend any one of the following 3 sessions)	
Concorde I 14.30-15.00	Session 4: Pharmacy Practice Invited Speaker <i>The contribution of complementary and alternative medicine to sustainable health care</i> Dr. Maryam Farooqui	
15.00-16.30	15.00-15.15 OPP8 15.15-15.30 OPP9 15.30-15.45 OPP10 15.45-16.00 OPP11 16.00-16.15 OPP12 16.15-16.30 OPP13	

DAY 2	28 JUNE 2018 (THURSDAY)
Grand Patio 14.30-15.00 15.00-16.30	<p>Session 5: Pharmacy Practice</p> <p>Invited Speaker <i>Probiotics and gut revival: It is all about balance</i> Assoc. Prof. Dr. KalavathyRamasamy</p> <p>15.00-15.15 OPP14 15.15-15.30 OPP15 15.30-15.45 OPP16 15.45-16.00 OPP17 16.00-16.15 OPP18</p>
Patio I 14.30-15.00 15.00-16.30	<p>Session 6: Pharmacy Practice</p> <p>Invited speaker <i>STARZ-DRP: A prospective approach to ensure the image of community pharmacist as a supreme medication protector</i> Mr. NazriNordin</p> <p>15.00-15.15 OPP19 15.15-15.30 OPP20 15.30-15.45 OPP21 15.45-16.00 OPP22 16.00-16.15 OPP23</p>
Concorde I 17.00-17.30	<p>Closing ceremony Closing remarks and award presentation</p>

PLENARY SPEAKERS AND ABSTRACTS

ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH



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IMPROVING CARDIOVASCULAR DISEASE MANAGEMENT THROUGH MULTIDISCIPLINARY TEAM: ROLE AND OPPORTUNITY FOR PHARMACIST

ASSOC. PROFESSOR SURAKIT NATHISUWAN

Department of Pharmacy, Faculty of Pharmacy, Mahidol University, Thailand

Abstract

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality worldwide including Southeast Asian countries. Tremendous amount of research are constantly being conducted in CVD management to improve patient outcomes. With stream of new information and new interventions become available, CVD management has become one of the most active and fast evolving fields.

With increasing complexity of treatment strategies, selection of the right treatment for the right patient at the right circumstances and with the right way becomes an important yet intricate part of a successful management plan. More often than not, CVD patients are at high risk of drug related problems such as non-compliance, adverse drug events, medication errors and drug interactions. This mainly stems from the fact that some CVD drugs are with narrow therapeutic index and the nature of CVD patients which tend to be older and with multiple comorbidities requiring polypharmacy. Clinical pharmacists are uniquely positioned to address these issues due to their expertise in medication-use process and clinical pharmacology of CVD drugs. As a result, clinical pharmacists trained in managing CVD drugs can be an integral asset to a multidisciplinary team.

Recently, the Cardiovascular Team and Prevention Councils of the American College of Cardiology issued a joint council perspectives paper detailing the potential role of clinical pharmacists in a team-based care practice. In Southeast Asian region, movement of clinical pharmacists to participate in CVD management is notable. More and more cardiologists, cardiology nurses and other health personnel see the need to have clinical pharmacists on the team. However, various barriers exist and efforts must be made to overcome them. Collective efforts must be galvanized toward integrating clinical pharmacists into a CVD multidisciplinary team. This will help improve quality of care and subsequently increase visibility of pharmacy profession in a healthcare system as a whole

CONTRIBUTIONS OF SOCIAL PHARMACY FIELD IN IMPROVING QUALITY USE OF MEDICINES AND POPULATION HEALTH

PROFESSOR DR. MOHAMED AZMI AHMAD HASSALI
School of Pharmaceutical Sciences, Universiti Sains Malaysia, Malaysia

Abstract

The use of medicines to prevent, cure or reduce symptoms of illness in many societies around the world is widespread. For health consumers to achieve optimum health outcomes through the quality use of medicines (QUM), it is vital they have access to safe and effective medicines that are affordable. Besides that, access to reliable information about medicines and their alternatives is also essential to enable safe and appropriate use. Over the past decades, the main focus in pharmaceutical use has been on the development, supply, safety and pricing of a wide array of medicines, but, the forgotten dimension in all the rush has been the understanding of social determinants of the use of these medications by the health care professionals and society at large. Issues such as poor prescribing habits and adherence to chronic medications still become a major hindrance for improving quality use of medicines around the world. Besides that, lack of understanding by healthcare practitioners towards consumers' psychosocial, behavioural and economics needs for medication treatment remains as one of the major stumbling block to achieve quality use of medicines and holistic population health agenda. Within this context, the concept of psychosocial and health psychology are embedded as the fundamental foundation in the field of social pharmacy and it is imperative that the contribution of this field in devising future QUM strategies need to be given priority. In this presentation the contribution of social pharmacy field and research in Improving QUM initiatives will be thoroughly discussed.

DEVELOPMENT OF APPROPRIATE MEDICINES FOR CHILDREN: APPLICATION OF CLINICAL PHARMACY AND PHARMACEUTICAL SCIENCE

PROFESSOR IAN C K WONG

Department of Practice and Policy, UCL School of Pharmacy, United Kingdom

Abstract

In the past, the majority of medicines were developed and marketed for adults. Therefore, much of the currently licensed medicines are not suitable for use in children. In terms of formulation, there are particular challenges in developing appropriate formulations for children. An ideal paediatric formulation must allow accurate dose administration in a dosage form that can be handled by the target age group. Other important considerations are the choices and number of excipients used in formulations for this vulnerable age group. Although oral formulations are generally acceptable to most paediatric patients, they are not suitable for drugs with poor oral bioavailability or when a rapid clinical effect is required. In recent years, transmucosal delivery, particularly buccal and intranasal, has emerged as an attractive route of administration for paediatric patients. Through this route, drugs are absorbed through the oral or nasal mucosa, bypassing the hepatic first pass metabolism and therefore, avoids degradation in the gastrointestinal tract. The high blood flow and relatively high permeability of oral mucosa allows for quick onset of action. It is a simple and non-invasive route of administration. However, there are barriers to overcome in the development of transmucosal formulations. During this talk, Professor Wong will share his experience on the development of "Ayendi" (intranasal diamorphine) in the UK.

PHARMACY EDUCATION BEYOND BORDERS

PROFESSOR CLAIRE ANDERSON

School of Pharmacy, University of Nottingham, United Kingdom

Abstract

These are challenging and exciting times for pharmacy and pharmacists. The global profession makes a broad and vital contribution to the health of patients and economic growth through roles in community, hospital, industrial and academic pharmacy. However, there are strong pressures on pharmacists to make deeper contributions to clinical practice and patient outcomes through improved knowledge, interprofessional team working and enhanced competencies based on local needs. These pressures originate from the profession raising its own aspirations via bodies like FIPED and initiatives such as the independent Commission on Education of Health Professionals for the 21st Century, WHO Transformative Education Guidelines, Modernising Pharmacy Careers Programme in the UK, the moves to PharmD for example in India Thailand, Nigeria and Ghana. There are also external pressures originating from, increased patient life expectancy, increased chronic disease burdens, new classes of drug and therapeutic interventions, and cost saving initiatives that will be a feature of healthcare for many years to come.

The Global Conference on Pharmacy and Pharmaceutical Sciences Education held in Nanjing, China on the 7 and 8 November 2016 was a milestone for pharmacy education as for the first time scientists and practitioners gathered with educators to agree on a Vision for future of Pharmaceutical Education.

As a result of this Conference, The International Pharmaceutical Federation (FIP) published three major documents that will serve to inform future strategic planning of education in the context of workforce development supporting national policies and strategies. FIPED is committed to advance pharmacy and pharmaceutical sciences education to support the development of the profession on a national level to ensure workforce is competent, sufficient and well distributed.

The outcomes of the Global Conference on Pharmacy and Pharmaceutical Sciences Education were:

1. A Global Vision for Education and Workforce
 2. A set of Pharmaceutical Workforce Development Goals
 3. The Nanjing Statements (on Pharmacy and Pharmaceutical Sciences Education)
-

RECENT ADVANCES IN PUBLIC HEALTH RESEARCH

PROFESSOR PRANEELIAMPUTTONG

School of Science and Health & Core Member- Translational Health Research Institute (THRI), Western Sydney University, Australia

Abstract

Due to the shift towards the social model of health care, public health researchers and practitioners have increasingly become interested in the insider perspectives and experiences of key players in health, including health consumers and healthcare providers. Thus, qualitative research has been adopted in public health in many ways and in numerous fields of health research. In the last few decades, attempts have been made to provide more evidence-based public health care to individuals and communities. Thus, we have witnessed a large number of research projects carried out in the public health area and often this involves the use of quantitative methodology including experimental design, epidemiology and systematic reviews of interventions. But will this research reflect the realities of people? Particularly, what does this mean to people who do not have opportunities to contribute in research that can be used as 'evidence' in health care? In this presentation, I will discuss evidence-based practice in public health and the contribution of qualitative inquiry. In particular, I will discuss the essence of qualitative inquiry, evidence-based practice in public health, and the role of qualitative inquiry in providing evidence for sensitive and appropriate health practices in public health.

PUBLIC-PRIVATE PARTNERSHIP IN THE MANAGEMENT OF TUBERCULOSIS

PROFESSOR DATO DR. HJ ABDUL RAZAK ABDUL MUTTALIF

MAHSA University, Malaysia

Abstract

It has long been recognized that the private health sector provides a considerable proportion of services for communicable diseases, including tuberculosis, which continue to form the largest burden of infectious disease in the Region and also in Malaysia. The private health providers have been shown to be often the first and only point of contact for over 60% of patients with tuberculosis. Their role is particularly important, since detection and cure remain the major interventions for reducing disease transmission. Recognizing the importance of collaboration between the private health provider and the National TB control Programmes (NTP), WHO initiated projects on public-private partnerships (PPP) in the SEA Region in 1995. The assessment of this partnership in the year 2000, found several initiatives that had achieved considerable success in the tuberculosis control.

The strengths within the private sector offer many opportunities to NTPs to rapidly improve local access and acceptability through the personalized private sector practices of more convenient timings and locations, shorter waiting periods, closer identity with the communities they serve and greater trust enjoyed. Co-opting the private health sector to deliver directly observed therapy strategy (DOTS), would therefore afford opportunities to rapidly enhance case-finding and treatment outcomes while according a sense of joint ownership and accountability for TB control. This sharing of the "service load" would, in addition, ensure long term sustainability.

In Malaysia PPP have been started over the past ten years and there is good collaboration with all sectors in the private, including pharmacies.

COMPARATIVE STUDY OF DRUG CLASSIFICATION: A LITERATURE REVIEW

LEELAVANICH D, PIENSAKNUSORN N, NAKAWONG S, ANANTACHOTI P*

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Abstract

Thai FDA is amending Drug Act BE 2510. One of the revising issues is drug classification. This study aimed to compare drug classification among 6 countries; USA, UK, New Zealand, Canada, Japan and Thailand. Literature search was conducted using government website and credible published sources. Three drug groups; antihistamine, nonsteroidal anti-inflammatory drugs (NSAIDs), and peptic ulcer drug, were used as proxy to see actual drug classification practice. It was found that all countries classified drug in two major categories, prescription and non-prescription drugs. The USA is the only country that classified drug in two categories (prescription vs over-the-counter), while five other countries categorised non-prescription drugs in 2-3 subgroups. Non-prescription was categorised by control measure [e.g. control by pharmacist (i.e. pharmacy-only medicine (UK), or control by distribution channel (i.e. schedule 3 drug (NZ), or not control by person or place (e.g. general sale list (UK, NZ, TH))]. When comparing three drug groups across six countries, it was found that Ibuprofen, cimetidine, ranitidine, cetirizine, loratadine, fexofenadine 60 mg were NSAIDs, peptic ulcer drug and antihistamine unanimously classified as non-prescription drugs among the six countries. In Thailand, all drug items in three drug groups were classified as dangerous drug which did not need prescription, but require pharmacist to hand drugs to patients. While in Japan, all PPI, most NSAIDs except ibuprofen, and third generation antihistamine except fexofenadine, were classified as prescription drugs. In conclusion, drug classification alone might not be effective enough strategy to ensure patient safety. Other system factors such as pharmacovigilance system, health insurance system, separation of prescribing-dispensing, and patient literacy play key role in each government drug classification decisions.

Keywords: Drug classification, Prescription drugs, Non-prescription drugs, Over-the-counter drugs

PREVALENCE, FACTORS AND COST COMPARISON ASSOCIATED WITH POTENTIALLY INAPPROPRIATE MEDICATIONS (PIMS) BY BEERS CRITERIA AMONG ELDERLY OUTPATIENTS IN HOSPITAL TUANKU FAUZIAH (HTF), MALAYSIA

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Abstract

Malaysia will be a full ageing nation by 2030. Elderly (aged 65 years and above) population often have multiple comorbidities. Hence, they are at risk of polypharmacy and potentially inappropriate medications (PIMs). This study aimed to investigate the prevalence and factors associated with PIMs among elderly outpatients in HTF, and its burden of direct pharmacotherapy cost to the Ministry of Health Malaysia. This is a cross-sectional study involving clinic prescriptions among the elderly with more than one-month prescribing duration received by the outpatient pharmacy from 1st March 2017 to 15th April 2017. Patient identifiers were keyed-in initially in Microsoft Excel and were screened using Pharmacy Information System (PhIS) to exclude multiple visits and duplicate prescriptions. Patients were categorised as PIM group and non-PIM group using Beers Criteria 2015. Logistic regression analysis was conducted using SPSS v20.0 to examine the factors associated with PIMs. The median monthly prescription drug cost was compared between PIM and non-PIM groups by Mann-Whitney test. Of the 472 patients, 38.9% patients had at least one PIM while 61.1% patients did not receive any PIM. 96.8% of patients only visited one type of clinic compared to only 3.2% visited more than one clinic. The number of medications prescribed was an independent risk factor for the prescribing of PIMs (OR: 2.04; 95% CI: 1.40, 2.97). The median monthly prescription cost for PIM group was MYR 29.50 (≈USD 7.53) which was not statistically significant ($p=0.735$) as compared to the non-PIM group which was MYR 28.50 (≈USD 7.28). This study showed that PIM was frequently prescribed in HTF with the number of medications as the only factor. However, the prescribing of PIM did not add nor reduce direct cost of pharmacotherapy in our setting.

Keywords: Potentially inappropriate medication list; patient safety; drug-related side effects and adverse reactions; polypharmacy

MEDICATION OMISSION ERRORS IN THE EMERGENCY DEPARTMENT**LIM CY, CHONG MM, KHOO SP, TAN WH, NUR AINA DIANA CD, WONG KH, VIVIAN CHENG EM, NURJALILAH MR****Department of Pharmacy, Hospital Serdang, Malaysia. Email: cath_lim612@yahoo.com**

Abstract

The fast pace and emergency nature of care at emergency department (ED) is an area prone for medication errors. These errors may threaten patients' health and cause unwanted events. The study described the medication omission errors (MOE) at ED, Hospital Serdang. A cross sectional study was conducted among 20 patients who were pending for ward admission between April to August 2017. Past medication history, obtained through patient interviews, were compared with medication charts (manual and electronic) and administration medication records. Medication omission errors (MOE) defined as failure to administer an ordered dose to a patient before the next scheduled dose or failure to prescribe a medication that is indicated. The MOE were detected at 3 stages i.e. prescribing on manual prescription, ordering medication via electronic system, and administering medications. The MOE were further classified into prescribing omission error (PresOE) and administering omission error (AdmOE). A total of 200 medications were administered to 20 patients. The highest frequency of MOE was electronic PresOE (69.3%), followed by AdmOE (27.5%) and manual PresOE (24.4%). The most common medication that encountered PresOE was lipid lowering agents (33.3%), followed by antihypertensives (24.2%) and supplements (18.2%). On the contrary, the highest frequency of AdmOE pertaining to antihypertensive medication (28.6%). Medication omission errors happened during prescribing and administering stages especially in the setting of a busy emergency department. Thus, mitigation strategies are crucial for reducing MOE and preventing any unwanted adverse event in EDs.

Keywords: Medication omission error, emergency department, patient safety

PREVALENCE OF MEDICATION ERRORS AT AN EMERGENCY DEPARTMENT OF A TEACHING HOSPITAL IN MALAYSIA

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Abstract

Medication error (ME) is any preventable harm caused to patient during medication process while the medication is in the control of both healthcare practitioner and patient or the patient's caregiver. Previous studies conducted in Malaysia reported the proportion of 11.7% to 97.7% of ME in different hospital settings. However, little is known about the prevalence of ME at emergency department (ED) in Malaysian hospitals. The objective of this study was to determine the prevalence of ME at an ED of a teaching hospital in Malaysia. A cross-sectional study was conducted over the period of nine weeks (8 am -5pm) on patients who visited the ED of Hospital Universiti Sains Malaysia (HUSM), Kelantan, Malaysia. Data on patient medication orders and demographic information was collected from the doctor's clerking sheet. Observations were made on nursing activities and these were documented in the data collection form. Other information related to the administration of medications were obtained from the nursing care records. Data were collected for 547 patients who were assigned to various treatment zones in the ED. 311 were randomly selected for analysis. 95 patients had at least one ME. The prevalence of ME was 30.5%. The most common types of ME were wrong time error (64.2%), unauthorized drug error (34.7%), omission error (25.3%) and dose error (12.6%). Patients with motor vehicle accidents, sepsis cardiovascular, respiratory and gastric disorders were the most commonly affected. 86.6% of the ME were potentially harmful, while 13.4% of the ME caused harm to the patient. No death was recorded. The prevalence of ME in our ED setting is high. However, the majority of them did not result in patient harm. Intervention measures are needed to prevent further occurrence.

Key words: Medication Error (ME), Emergency Department(ED), Doctors, Nurses

SYSTEMATIC REVIEW OF ADHERENCE TO DIRECT ORAL ANTICOAGULANTS IN PATIENTS WITH ATRIAL FIBRILLATION IN CLINICAL PRACTICE

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Abstract

Direct oral anticoagulants (DOACs), such as dabigatran and rivaroxaban, have in the past decade replaced vitamin K antagonists (VKAs), such as warfarin, as standard treatment for thrombosis prophylaxis and stroke prevention in patients with atrial fibrillation (AF). Adherence to DOACs is crucial to optimise clinical outcomes in patients with AF. The aim of this review is to systematically evaluate published evidence describing adherence to DOACs in patients with AF in real world clinical practice. A systematic search combining terms for direct oral anticoagulants, atrial fibrillation and relevant adherence measurement tools was conducted in PubMed in March 2018 to identify related English language publications. All observational cohort studies that assessed adherence of DOACs in patients with AF by using healthcare institution databases, including pharmacy records, medical claims datasets, and other relevant data were reviewed for inclusion. Data describing study characteristics and adherence profile were extracted and summarised using qualitative methods. The PubMed search identified 278 citations. After screening the titles and abstracts, full articles were obtained for 36 articles and of these, 22 articles were included. These 22 studies involved around 300,000 AF patients, described the adherence of DOACs in clinical practice in the United States, Europe, and Turkey and were published between 2013 to 2018. Proportion of days covered (PDC) was the most commonly used tool for adherence measurement followed by medicine possession ratio (MPR). Adherence to DOACs was found to be good in most studies, defined as PDC $\geq 80\%$ and MPR $\geq 80\%$. While these published evidence indicated that adherence to DOACs in real world clinical practice is generally good, clinical outcomes can be optimised by identifying AF patients with sub-optimal adherence and developing interventions to improve adherence in these patients within clinical practice.

Keywords: Adherence, Oral anticoagulant, Atrial fibrillation, Proportion of days covered (PDC), Medicine possession ratio (MPR)

PRIOR ANTIPLATELET USE AND CLINICAL OUTCOMES IN THOSE UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

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Abstract

Antiplatelets are used as primary prevention in patients with high cardiovascular risk, in secondary prevention as well as treatment of acute coronary syndrome (ACS). Studies have assessed the benefits of prior antiplatelet use in reducing all-cause mortality or coronary artery disease readmissions; however, there is lack of data on the impact of prior antiplatelet use on the successfulness of and development of complications during hospitalization post primary percutaneous coronary intervention (PPCI). The present study was undertaken to evaluate whether prior antiplatelet use is associated with better clinical outcomes than non-prior antiplatelet use. Patients were identified from the PPCI patients' list in Hospital Serdang between May 2015 and November 2016. Data were collected via the electronic Hospital Information System (eHIS). Patients were grouped according to whether they were prior antiplatelet (PAP) users or non-antiplatelet (NAP) users. PAP users are defined as those who use antiplatelet agents within 30 days before admission (not immediately before PPCI). Outcome measures (cardiovascular (CV) events and bleedings) during hospitalization were compared using logistic regression analysis adjusted for important clinical factors. Cardiovascular events include ACS, stroke, stent thrombosis and death. A total of 227 patients [male 89%, median age 54 years] were included. Of these, 25.6% were PAP users and 72.2% were NAP users. During hospitalization, CV events for PAP and NAP were 5.2% vs 4.3% respectively (adjusted OR=1.22; 95% CI: 0.30-4.94; p=0.774). On the other hand, bleeding complication was 5.2% for PAP users and 4.3% for NAP users (adjusted OR=1.33; 95% CI: 0.32-5.58; p=0.695). Prior antiplatelet use before PPCI was not associated with lower risk of CV events and bleeding complications during hospitalization in patients who had PPCI after adjustment for common factors. However, this is a small retrospective analysis and need exploring in future studies.

Keywords: prior antiplatelet use, percutaneous coronary intervention, cardiovascular events, bleeding complications

ASSOCIATION OF SITE AND SOURCE OF INFECTION IN ICU SEPSIS PATIENTS: IMPACT ON CLINICAL OUTCOMES

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Abstract

Source control in sepsis is required to identify the infection source and to be followed by intervention (surgical or non-surgical therapeutic approaches) used to control specific site of infection and to change influences that enhance the microorganism involvement or that decrease the self-defense immunity mechanisms. This study determined the association of source or site of infection in ICU patients and predictors or risk factors for mortality, APACHE II and ICU-LOS. A retrospective cohort study conducted in tertiary ICU hospital (Sungai Buloh) in Selangor. 228 adult patients' files with sepsis met the inclusion study criteria were reviewed. Univariate and multivariate (MVA) logistic & cox regression modelling were performed to detect relationship between site or source of infection-(SI) and ICU-mortality. Also, univariate and (MVA) linear regression were used for determining association between (SI) with APACHE II score and ICU length of stay (LOS). Across all sites of infection, majority of the patients were with community acquired infection (CAI) 118 (51.8%), while the rest were with hospital acquired infection (HAI)110(48.2%). In univariate logistic regression, the unknown source (US) of infection was significant predictor for non-survival OR=0.293 (95% CI: 0.092-0.936; $P=0.038$). Also, in simple linear regression (SLR), other sources such as the abdominal infection $R^2=0.022$ (95% CI: .315-4.716; $P=.025$) was predictor to increase the APACHE score, while Diabetic food ulceration /Amputation $R^2=0.107$ (95% CI: -12.177- -.442; $P=.035$) and Neuro source infection(NSI) $R^2=0.107$ (95% CI -6.891- -2.823; $P=.000$) were predictors for reduction of severity index APACHE II score respectively. However, in MVA, only the (NSI) was significant predictor for APACHE score reduction $R^2= -7.779$ (95% CI: -12.050- -3.508; $P=.001$). In addition, in (SLR) the HAI $R^2=0.034$ (95% CI: -5.614- -1.006; $P=.005$) and surgery source(SS) $R^2=0.030$ (95 % CI: .766- 5.401, $P=.009$) were predictors for increment in ICU-LOS respectively. While, in MVA, only the (SS) was significant predictor for ICU-LOS $R^2=0.478$ (95 % CI: .408- 4.045, $P=.017$). In addition, in simple cox regression, the (SS) risk HR. 1.533(95% CI: 1.131-2.078, $P=.006$) and CAI the risk HR. 1.389(95 % CI: 1.041-1.854, $P=.026$) were significant risk factors for ICU mortality respectively. The unknow source of infection was predictor for non-survival. Additionally, the neuro source of infection was predictor for reduction of APACHE II score. While, the surgery source was predictor to increase ICU-LOS. CAI and surgery were also risk factors for ICU mortality. The prompt control for source of infection in sepsis, would improve the survival and other clinical outcomes.

Keywords: Infection, site, source, Sepsis, APACHE II, ICU- length stay, predictors, risk factors, mortality

KNOWLEDGE, ATTITUDE AND PRACTICE OF CAREGIVERS ON MEDICATION MANAGEMENT AT RESIDENTIAL AGED CARE FACILITIES

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Abstract

Apart from an increasing trend in the aged population, an escalating proportion of the aged group is associated with a growth in the prevalence of ill health. Caregivers at residential aged care facilities (RACFs) play an important role in managing residents' medications, however studies on medication management and caregivers is lacking. This study assessed the knowledge, attitude and practice (KAP) of caregivers on medication management at RACFs. It was a cross-sectional study involving caregivers of 90 RACFs throughout the country. A pilot study was conducted to test content and face validity. The self-administered questionnaire was developed based on extensive literature review and expert's opinions containing 42-items divided into three domains of knowledge (22 questions), attitude (6 items) and practice (13 questions). Response rate was 71% with 128 questionnaires returned. Internal consistency reliability measured by Cronbach's coefficient alpha for knowledge, attitude and practice was 0.631, 0.666 and 0.575 respectively. The mean age of respondents was 41.30 ± 14.3 and length of service was 9.26 ± 7.86 . A majority of caregivers (71.9%) know what medication management is, however, 48.4% have not ever experienced any training on it. A median score of 77.27% for knowledge, 70.83% for attitude and 68.66% for practice was obtained. Interpretation of the assessment scores for the domains were proposed as good, moderate and poor. More than half of the respondents possessed good level of knowledge (69.5%, n = 89), around half (57.8%, n = 74) had good attitude and less than half (46.9%, n = 60) had good practice of medication management. Level of education, special qualification and experience of medication management training were the factors that correlated with better score outcomes ($p < 0.05$). More support and training programs on medication management could be conducted by pharmacists for caregivers to enable improvements in residents' medication use.

Keywords: attitude, caregivers, knowledge, medication management, practice, residential aged care facilities

STROKE KNOWLEDGE AMONG CAREGIVERS OF STROKE SURVIVORS

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Abstract

Incident of stroke is increasing among Malaysian. Family members who serve as informal care providers have a critical role in the general management of stroke survivors after discharged. Lack of stroke knowledge may lead to fear, misconceptions and inappropriate behaviour that will potentially interfere with the process of seeking medical attention and suboptimal secondary prevention. There is limited study on level of stroke knowledge and misconceptions in caregivers of stroke patients in Malaysia. This study aimed to provide an overview of current stroke knowledge among the caregivers of stroke survivors in Malaysia. A cross-sectional survey was conducted in Universiti Kebangsaan Malaysia Medical Centre and National Stroke Association of Malaysia. Caregivers of stroke survivors were selected conveniently and data was collected within two months period. Stroke Knowledge Test was used to evaluate the current stroke knowledge among the samples. Overall, 200 caregivers were recruited in this study. The mean age of the caregivers was 42.7 years. Majority of the caregivers were Malay (46%), female (58.5%), married (70.5%) and had less than three years of caregiving experience (80.5%). This study highlighted that stroke caregivers had intermediate knowledge towards stroke disease, with stroke knowledge score of 9.63 (SD=3.14). Analyses undertaken to explore determinants of stroke knowledge revealed gender ($p=0.039$), race ($p<0.001$), education level ($p<0.001$), relationship ($p=0.003$) and previous experience of studying or working in health related sector ($p=0.008$) as significant predictors. Overall, the stroke knowledge score in our samples were moderate. There is a need to develop stroke education programs for family caregivers to improve their overall knowledge and standard of care.

Keywords: stroke, knowledge, caregivers, survivors

OPP10

PATIENT KNOWLEDGE OF HYPERTENSION: A COMPARISON BETWEEN DEVELOPED AND DEVELOPING COUNTRIES

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Abstract

Hypertension, or high blood pressure, is commonly recognized as a worldwide health problem that affects nearly twenty percent of the adult population on the planet. Although hypertension can be diagnosed with simple equipment that is available in all countries around the world and controlled with lifestyle changes and medication, it has been known to cause a number of serious conditions and diseases. The present paper aimed to reveal the differences between the patients' knowledge of hypertension in developed and developing countries as a part of the quality assessment to improve the control outcome of the disease. PubMed central, Scopus, Google, and Google Scholar were searched for the articles about patient hypertension knowledge. These studies were evaluated and relevant data were abstracted, summarized and compared. The review showed that a greater knowledge in the developed countries was possessed by women, overweight, obese individuals and those without financial barriers. In addition, this study found that hypertension awareness was low in both developing and developed countries and urban populations possessed more knowledge about the specifics of the condition, such as proper definition and implications. Also, a wide range of reviewed scholar inquiries have shown that many people were not diagnosed with hypertension even though they had already developed the condition. Moreover, it was discovered that both rural and urban residents did not possess sufficient knowledge that would allow them to keep blood pressure under control in an effective way. Also, the study showed that the most popular predictors of better knowledge were female sex and age over 65. Further research might be conducted to identify other specific areas that lack hypertension knowledge for patients in developed and developing countries to prevent further increase of the global hypertension level, provide individualized treatments and reduce the total health care costs.

Keywords: Hypertension, hypertension-related knowledge, life-style practices, hypertensive patients, blood pressure

PATIENTS' PERCEPTION OF THEIR SUBSIDIZED MEDICATIONS COST AND ITS ASSOCIATION WITH MEDICATION ADHERENCE BEHAVIOUR

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Abstract

Non-adherence among patients with medication subsidies may result in medication wastage and increase in the country's economic burden. However, factors that contribute to non-adherence among patients receiving medication subsidies remains unknown. Thus, this cross-sectional study was conducted to evaluate the perception of patients on the cost, perceived quality and effectiveness of their subsidised medications and its influence on medication adherence behaviour. The study was conducted from September to November 2017 at outpatient pharmacy, Universiti Kebangsaan Malaysia Medical Centre (UKMMC). Patients were conveniently recruited in the study if they received treatment at UKMMC, aged 18 years old and above, take at least one prescribed medication and able to understand Malay, English or Mandarin language. Patients who agreed to participate were interviewed and asked to fill the Malaysian Medication Adherence Scale (MALMAS). Binary logistic regression model was used to determine factors that influence patient's underestimation of subsidised medication costs and patients' adherence to medication. Variable with a p-value of <0.05 was considered as significant. A total of 211 patients participated in this study. Patients who were unaware of their medication cost and perceived medication as of not good quality were 7.75 and 5.72 times more likely to underestimate the medication costs ($p < 0.05$) than those who were aware. While, partially subsidised patients and those with income of RM1000-2000 were 0.31 and 0.28 less likely to underestimate the cost of medications ($p < 0.05$). However, when medication non-adherence was modelled, partially subsidised patients were 1.91 more likely to be non-adherent than those who received medication as fully subsidised ($p = 0.04$). In addition, those who perceived their medication as not effective were 2.93 times more likely to be non-adherence than those who perceived their medication as effective ($p = 0.002$). In conclusion, inaccurate estimation of medication costs does not influence patients' medication adherence behaviour. Providing medication as fully subsidised and ensuring perceptions of medication as effective may help to increase patients' medication adherence.

Keywords: perceived cost; subsidized medication; medication adherence

SELF-EFFICACY IN MEDICATION USE AND UNDERSTANDING AMONG HYPERTENSIVE MAURITIANS

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Abstract

Critical issue of misunderstanding medication instructions focuses not only the act of taking medication but the understanding on how the medication has to be taken. The study aimed to determine the level of self-efficacy in medication use and understanding, and its attributable parameters among hypertensive Mauritians. In this cross-sectional study, medication use and understanding self-efficacy scale (MUSE-8) (Cronbach's alpha = 0.951) was disseminated among hypertensive Mauritians (18 – 74 years old) at 4 public hospitals receiving treatment with at least one antihypertensive medication, between January to February 2017. Using SPSS version 22, several tests (i.e. Mann Whitney U, Kruskal Wallis, Chi square and Spearman correlation tests) were performed to assess the differences, association and correlation between the independent and dependents variables respectively, with p value < 0.05 considered significant. The mean (\pm SD) MUSE score among 389 hypertensive Mauritians with mean (\pm SD) age of 54.74 (\pm 10.96) years old was 26.35 (\pm 4.02) that fall under high MUSE category (score: 24 – 32). Between MUSE and independent variables, significant differences [age categories (p < 0.001), gender (p = 0.036), education level (p < 0.001), occupational status (p = 0.001), age at first diagnosed with hypertension (p < 0.001), number of antihypertensive medication (p = 0.014)], associations [age categories (p < 0.001), ethnicities (p = 0.033), education level (p < 0.001), occupational status (p = 0.005), age at first diagnosed with hypertension (p < 0.001), number of years taking antihypertensive medication (p = 0.015), number of antihypertensive medication (p = 0.027)] and correlations [age (p < 0.001), age first diagnosed with hypertension (p < 0.001), number of years taking antihypertensive medication (p < 0.001), number of antihypertensive medication (p = 0.023)], were reported. Enrolled hypertensive Mauritians possessed high MUSE was affected by selected socio-demographics and clinical characteristics of the patients.

Keywords: Self-efficacy, medication use and understanding

IMPACT OF PHARMACIST-LED EDUCATIONAL INTERVENTIONS ON CLINICAL OUTCOMES OF PATIENTS WITH TYPE 2 DIABETES: A NETWORK META-ANALYSIS

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Abstract

Comparative effectiveness of different pharmacist-led interventions on glycaemic control and other clinical outcomes of type 2 diabetes patients is not clear. This review aimed to evaluate the impact of various pharmacist-led interventions in type 2 diabetes patients. Online search was done from five electronic databases from date of database inception to September 2017, for randomized control trials which examined the clinical effectiveness of different pharmacists-led educational interventions, directed at patients with type 2 diabetes. Glycosylated haemoglobin (HbA_{1c}) was the primary clinical outcome. Traditional and network meta-analysis were applied to evaluate clinical outcomes. Forty-three studies involving 6259 type 2 diabetes patients were included. The network meta-analysis revealed that all pharmacist-led interventions, irrespective of nature of intervention, showed statistically significant reductions in HbA_{1c} levels, when reference arm was set as usual care. Pharmacist-led diabetes education in combination with pharmaceutical care was the most effective intervention for reducing HbA_{1c} (-0.86, 95% CI [-0.983, -0.727]; $p < 0.001$; $I^2 = 55.8\%$), fasting blood sugar (-32.06; 95% CI [-35.47, -20.65]; $p = 0.001$; $I^2 = 60.0\%$), systolic blood pressure (-8.18; 95% CI [-10.97, -5.39]; $p = 0.008$; $I^2 = 59.6\%$), diastolic blood pressure (-3.15; 95% CI [-5.08, -1.21]; $p = 0.010$; $I^2 = 60.3\%$), low density lipoprotein (-0.36; 95% CI [-0.51, -0.21]; $p < 0.001$; $I^2 = 63.8\%$), triglycerides (-0.41; 95% CI [-0.61, -0.20]; $p < 0.001$; $I^2 = 0.0\%$), and, high density lipoprotein (0.08; 95% CI [0.02, 0.15]; $p = 0.04$; $I^2 = 57.3\%$). The findings of this review demonstrate all interventions had a significantly positive effect on HbA_{1c}, but there was no statistical evidence from this study that one intervention was significantly better than the other for glycaemic control. Pharmacist based diabetes education plus pharmaceutical care showed maximum effect on HbA_{1c} and rest of the clinical outcomes.

Keywords: Diabetes education, glycosylated haemoglobin, type 2 diabetes, pharmaceutical care, meta-analysis

DIABETES SELF-MANAGEMENT EDUCATION PROGRAMME: NEEDS AND CHALLENGES**WONG YUET YEN^{1*}, MOHAMED AZMI HASSALI², LIM CHING JOU³, NEOH CHIN FEN⁴**

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Abstract

Patient-driven disease self-management activities are essential in long-term type 2 diabetes mellitus (T2DM) management. To achieve good glycaemic control, T2DM patients need to undertake seven self-care behaviours, namely healthy diet, exercise, medication taking, monitoring, problem-solving, healthy coping and risk reduction. Diabetes self-management education (DSME) is therefore imperative to empower patients with the necessary skills and knowledge to manage the disease. Although evidence suggested that DSME is beneficial for patients' outcomes, debate remains on how to deliver such education. In this study, we conducted in-depth face-to-face interviews among participants who had involved in a locally developed 6-weekly DSME programme offered at community halls in the state of Penang, Malaysia. All interviews were transcribed verbatim and analysed using thematic analysis approach. Data saturation was reached and three main themes concerning the DSME programme emerged from 17 interview sessions: self-perceived effective learning model; non-threatening community setting and reaching out to wider communities. Our findings revealed that group-based education was seen as valuable to participants as they appreciated the group support and opportunity to learn from peers with the same disease. Participants enjoyed attending educational sessions with simplified analogies coupled with interactive hands-on activities. Community hall was thought to be a suitable place to conduct DSME due to its accessibility and familiar environment. Participants expressed that DSME is helpful and should be offered on a continuous basis for sustainable T2DM self-management. Health promotion strategies should be in place to reach out to wider population with T2DM, especially to engage community patients in denial and early stage. From participants' perspective, an effective DSME was deemed as one that would help them in developing necessary competency to self-manage their disease and motivate them to sustain daily diabetes self-management activities.

Keywords: Diabetes, self-care, self-management, patient education, qualitative

OPTIMIZING DIABETES MANAGEMENT IN PATIENT WITH TUBERCULOSIS DURING DOT VIA COLLABORATIVE PHARMACEUTICAL CARE SERVICE IN HOSPITAL SULTANAH NUR ZAHIRAH, KUALA TERENGGANU: AN ACTION RESEARCH STUDY

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Abstract

The association between diabetes mellitus (DM) and tuberculosis (TB) is well established. TB patients with DM took a longer time to clear M. TB during the course of treatment than non-DM patients. In Malaysia, as reported by the Ministry of Health, the total number of TB cases in 2017 was 26,168. Out of 200,043 of diabetes patients being screened, 625 of them had TB. In Terengganu, the number of diabetes with TB patients was 184. While the adherence of TB treatment was largely monitored through the directly observed treatment (DOT), most DOT visits were not utilized for DM monitoring. This qualitative study which used the action research approach was conducted in respiratory clinic, Hospital Sultanah Nur Zahirah, Kuala Terengganu. Data was collected from semi-structured interviews and field observations. Ten patients with TB and DM, nineteen health care professionals (i.e. physicians, pharmacists, nurses, medical assistants) in respiratory care team participated in the interviews. All interviews were audio recorded and transcribed verbatim. This study found that many patients still had a poor understanding of their disease management, DM control, and the importance of adherence to medication. Majority of patients had two different clinics follow-ups for these two diseases due to different specialty in disease management and time constraints. Generally, most healthcare providers who had frequent interactions with TBDM patients did play their roles in the management of DM but there was no specific guideline for TBDM counselling and the advice was given based on the individual's current knowledge and experience. Based on the study, pharmacists' exposure to TBDM patients was less compared to other healthcare providers. There is a potential role for pharmacists especially for those who had been formally trained in the DM MTAC service in managing TBDM patients during DOT. This study provides a basis for developing a detailed framework of pharmaceutical care management in TBDM patients.

Keywords: Tuberculosis Diabetes (TBDM), medication therapy adherence clinic (MTAC)

PHYSICIANS' AWARENESS OF STATINS UTILIZATION AMONG OUTPATIENTS WITH TYPE 2 DIABETES

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Abstract

The management of diabetic dyslipidaemia (DDM) remains a major challenge for physicians, as an array of lipid abnormalities characterizes it. The study aimed to compare the awareness of physicians in different specialties towards statins usage in DDM. A cross-sectional study was done at tertiary care hospital, Malaysia, January-July 2017. About 157 physicians administered a pre-tested and validated questionnaire with good reliability (Cronbach's-Alpha: 0.783). Demographic criteria, knowledge, attitudes, and practice (KAP) of statins utilization were assessed. The survey focused on the 2013 American college of cardiology/American heart association (ACC/AHA) dyslipidaemia therapy guidelines. The score of each respondent \geq the mean score was classified as good and a score $<$ the mean score was categorized as poor. IBM-SPSS V23.0 was used in data management. The distribution of respondents was as follow: medical (33.5%), intensive care unit (ICU) (16.5%), cardiology (7.5%), other (6%), 4% dermatology (4%), endocrine (3%), urology (3%), paediatric (2.5%), and rehabilitation (2.5%) department. The means of knowledge and practice score of all participants were 74.8% and 56.2%. Endocrinologists, cardiologists, rehabilitationists, dermatologists and medical had the highest knowledge of statins 85%, 84%, 82%, 78.8% and 75.4% respectively. While urologists, ICU, paediatric and medical officers' scores were 71.7%, 70%, 70% and 63.8% correspondingly. Cardiologists, endocrinologists, rehabilitationists, urologists and ICU staff practice' scores were 65%, 60%, 60%, 58.3%, and 57%, respectively. However, dermatologists, medical, medical officers, and paediatric practice' scores were 56%, 54.5% 49.1%, and 48%, correspondingly. All endocrinologists and rehabilitationists have a positive attitude about statins therapy. About 55% to 66.7% of other departments and 37.5% of urologists had a positive attitude toward statins use. Endocrinologists, cardiologists, and rehabilitation have a higher level of awareness and positive attitude which reflect on their advanced practice about statins prescribing in DDM. An educational intervention may improve the KAP scores of healthcare about statins therapy in DDM.

Keywords: Awareness, KAP, Physician, statin, type 2 diabetes

USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE AMONG PREDIALYSIS CHRONIC KIDNEY DISEASE (CKD) PATIENTS IN UNIVERSITY MALAYA MEDICAL CENTRE (UMMC)**NOORASYIKIN SHAMSUDDIN^{1*}, BENITA JOY SERAN¹, MAHMATHI KARUPPANNAN², MARYAM FAROOQUI³, WAN AHMAD HAFIZ WAN MD ADNAN⁴, SHUBASHINI GNANASAN²**

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Abstract

Chronic Kidney Disease (CKD) is a condition characterized by gradual loss of kidney function over time. The use of complementary and alternative medicine (CAM), particularly herbal medicine has raised concern in patients with CKD as they may be more vulnerable to the adverse effects and lead to worsening of their kidney function. Thus, a face-to-face interview was conducted among 240 predialysis CKD patients attending the renal clinic in UMMC from February to April 2017. A total of 230 patients agreed to be interviewed (response rate = 96.6%). The prevalence of CAM use is 51.7% (n=119). The majority of the respondents were females (53.0%, n=122), Chinese (39.1%, n=90), aged more than 60 years old (74.8%, n=172) and at Stage 4 of CKD (56.5%, n=130). There were significant associations between CAM use with the level of education and in patients with osteoarthritis ($p < 0.05$). The most commonly used CAM by the patients was biological-based therapy (79.0%, n=94), alternative medical system (15.0%, n=18) and manipulative mind body medicine (5.0%, n=6). The most common reason of CAM use was for the general health and wellness (64.0%, n=76). Most of the patients did not disclose their CAM use to their physicians (62.0%, n=74), mainly because physicians did not enquire (82.0%, n=61). In conclusion, around half of the predialysis CKD patients used CAM. Healthcare providers should be aware of the high usage of CAM among CKD patients and should advise them on the potential benefits and risks related to CAM use.

Keywords: Complementary medicine, alternative medicine, chronic kidney disease, chronic renal failure, predialysis

EFFECTIVENESS OF SMOKING CESSATION INTERVENTIONS IN MALAYSIAN PRIMARY CARE SETTING

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Abstract

Whilst overall effectiveness of a smoking cessation service in Malaysian primary care setting has been previously reported, however, none of these studies assessed the effectiveness of each smoking cessation intervention. This study aimed to evaluate the effectiveness of each smoking cessation intervention that was available in the primary care setting in Malaysia, measured as 6-month abstinence rate and also to determine the factors that associated with 6-month abstinence rate and predictors of smoking cessation. A multi-centre, retrospective cohort study was conducted. Medical records of participants who attended quit smoking clinics in Kuala Lumpur and Putrajaya from August 2015 to November 2016 were retrieved. Information on social demographics, smoking history, quit attempts and intervention types were collected, using a standardised data collection form. The primary outcome was abstinence at 6-month follow-up, confirmed by expired air carbon monoxide. Data were then analysed using SPSS version 24.0. Three hundred and thirty-four participants who fulfilled the inclusion criteria were included in this study. Overall 6-month abstinence rate was reported at 23.1%. Participants treated with counselling and varenicline achieved 32.1% of 6-month abstinence rate, followed by the group of counselling and NRT (20.8%), counselling only (15.0%) and the group of counselling, varenicline and NRT (13.0%). The 6-month abstinence rate was associated with age, baseline carbon monoxide reading, attending clinic, number of visits and the types of smoking cessation intervention. The predictors for smoking cessation were number of visit and intervention types. In the Malaysian setting, counselling with varenicline appeared to be the most effective option in smoking cessation.

Keywords: Impact, tobacco use, smoking cessation

STUDY ON EFFECTIVENESS OF METHADONE MAINTENANCE THERAPY (MMT) AND LIFE STYLE IMPROVEMENT AMONG OPIATE DEPENDENT PATIENTS REGISTERED WITH KLINIK KESIHATAN BAYAN LEPAS AND AADK TELOK BAHANG

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Abstract

In Malaysia, drug addiction has been a big threat since 1983. As of the latest statistic by National Anti-Drug Agency in 2016, the number of drug abusers in Malaysia was 30,846. Acknowledging the importance of drug abuse and relapse as a public health issue, Malaysian government had implemented Harm Reduction Programme. Under this programme, Methadone Maintenance Therapy (MMT) was launched in Oct 2005. This study was undertaken to evaluate the effectiveness of MMT programme among opiate dependent individuals in their daily life. In this study, 100 individuals from the Ministry of Health (MoH), Klinik Kesihatan Bayan Lepas (Bayan Lepas Health Clinic) and Agensi Anti-Dadah Kebangsaan (National Anti-Drug Agency) in Telok Bahang were involved. The subjects were interviewed with WHOQOL BREF questionnaires before joining the MMT programme and also after a minimum of 4 months joining MMT. Results obtained was used for comparing life style implications among methadone patients before and after joining the MMT programme. Participants were predominantly of Malay ethnicity (82%). Subjects were mostly aged between 51 to 60 years old (34%). Paired t-test was done on the WHOQOL scores at baseline (before MMT) and after participation for all four domains. Each domain showed significant improvement in QOL ($P < 0.05$). The highest improvement was shown in the psychology domain with the mean value increment of 15.13 ± 17.49 . Physical domain showed the least improvement with the mean value of 9.39 ± 16.21 . This study has proven that MMT have highly contributed to improvement of quality of life among MMT clients in Klinik Kesihatan Bayan Lepas and AADK Telok Bahang.

Keywords: Effectiveness, lifestyle improvement, MMT

FACTORS ASSOCIATED WITH ERECTILE DYSFUNCTION IN PATIENTS RECEIVING METHADONE MAINTENANCE THERAPY IN HOSPITAL PERMAI, JOHOR BAHRU**SHARMEENI¹, BAA FAZLINI¹, NOOR RATNA N¹, VIKNESWARI S¹**¹Department of Pharmacy, Hospital Permai, Johor, Malaysia. Email: ssharmee89@yahoo.com**Abstract**

Sexual dysfunction among patients receiving Methadone Maintenance Therapy (MMT), still remains as an issue which is prohibited or forbidden for discussion particularly in the Asian countries. In Malaysia, erectile dysfunction (ED) is a common but often neglected side effect of opiate substitute treatment. Yet, it is highly clinically relevant as it may interfere with therapeutic compliance to MMT. This study is conducted to study the prevalence of ED among patients on MMT and the factors associated in male patients on MMT in Hospital Permai, Johor Bahru. Self-administered questionnaire using International index of erectile dysfunction (IIEF-15) Malay Version was used. A total of 41 respondents responded to this survey, giving a response rate of 100%. The prevalence rate of ED among MMT patients in this study is 70.73%. The mean age was 39.12 (SD 9.73) years, the mean dose of methadone was 53.90 (SD = 34.99) mg and the mean of MMT duration is 19.32 (SD = 11.06) years. No significant difference was found between dose and duration of methadone among patients with and without ED. As for alcohol consumption, the majority of respondents (51.22%) are currently not consuming alcohol whereas (48.78%) of them are still consuming alcohol. All respondents (100%) are noted to be active smokers. No significant associations were found between ED and clinical variables in patients receiving MMT in Hospital Permai, Johor Bahru. The clinical profile of patients with ED did not differ significantly from the group without ED. The high prevalence rate of ED among MMT patients in this study is indicative of a need for further research with larger sample size to expose the relationship between clinical variables and ED among patients receiving MMT.

Keywords: Erectile dysfunction, methadone, methadone maintenance therapy, IIEF-15

PROMOTION OF MALARIA PREVENTION BY COMMUNITY PHARMACIST: A STUDY FROM SUDAN

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Abstract

Malaria is one of the top diseases with high mortality in Sudan. It constitutes a great social and economic burden to the community. Malaria prevention is a cornerstone in elimination of the disease. As in many African and Asian countries, community pharmacists in Sudan are contributing in the process of malaria prevention and treatment. This research was carried out to assess the contribution of community pharmacist in malaria prevention. The study was carried in Khartoum (country) between June to December 2016. Total of 293 pharmacists participated in the study. Data was collected via structured pre tested self-administered questionnaire. Data was analysed using SPSS version 23. The age of 92.2% of the respondents was between 20-39 years and 63.8% were having < 5 years of experience. Insecticides treated bed nets (ITNs) and mosquito repellent sprays and creams (MRs) were stocked in 80.5% and 93.9% of the pharmacies respectively. 5.5% of the pharmacists never educated the patients on use of prevention methods; however, 44.7% reported that sometimes they did. About 80.2% and 76.8% of the pharmacists educated the patients to use ITNs and MRs respectively. Near half of the pharmacists (47.7%) dispensed drugs for prophylaxis. The pharmacists showed poor knowledge regarding Intermittent Preventive Therapy of malaria in pregnancy. Barriers to effective contribution of community pharmacist in malaria prevention were lack of knowledge (50.9%), lack of time (35.8%) lack of training (72%) and lack of pharmacist-patient communication. Training is required for effective contribution of community pharmacist in malaria prevention.

Keywords: Malaria prevention, community pharmacist, Sudan

CONSUMERS' PERCEPTION TOWARDS PHARMACEUTICAL CARE SERVICES PROVIDED BY THE COMMUNITY PHARMACISTS IN KUALA LUMPUR

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Abstract

Community pharmacists have a major role in providing effective pharmaceutical care services to the public. Therefore, this study aimed to evaluate consumers' perceptions towards pharmaceutical care services provided by the community pharmacists. A total of 455 respondents were included in this study. The respondents were approached by random sampling at public areas in three districts of Kuala Lumpur. Results shown that about 48.4% of the total respondents visited community pharmacy every few months in which 69.5% of them obtained other products than medication. Respondents have good views towards community pharmacists. About 55% of them perceived that community pharmacists have a good balance in providing services towards patient's health and maintaining the business. However, the physician was chosen as the primary sources of reference (51.4%) for drug-related questions compared to the pharmacists and other related reference source. They put high trust on physician (45.2%) while 37.9% were unaware on the ability of the community pharmacists to answer inquiries. In contrast, community pharmacists were the preferred source of reference when it comes to minor illness (92.1%). About 50% of the respondents frequently received patient education services related to the medications and the purpose of prescription and non-prescription medication (45.3%). Three essential services that should be provided by the community pharmacists were the explanation on the indication, side effects of medications and advice on the usage of supplement and herbal products. There were significant associations between respondent's age, level of education and salary background with some of the expected services ($p < 0.05$). Positive response was received on the two pharmaceutical care services which are home medicine review (92%) and consultation via media electronic media (95.6%). In conclusion, consumer's awareness on the role of community pharmacist in providing pharmaceutical care services still need further improvement.

Keywords: Community pharmacist, pharmaceutical care services, consumer, perception

EVOLVING TRENDS IN DRUG DISCOVERY: BIOTRANSFORMATION A TOOL FOR GREEN CHEMISTRY REACTIONS

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Abstract

One of our extremely serious health threats is antimicrobial resistance. Hence, there is a pressing need to develop new antimicrobial therapies due to the significant threat of multidrug resistant pathogens and the persisting evolution of resistance. The power to combat infectious diseases deteriorates with the loss of effective antimicrobials; and healthcare professionals will also struggle to manage infectious complications common in high risk patients. Some examples of high risk patients are individuals that are undergoing chemotherapy treatments, in surgery, and organ transplantation, which are vulnerable to secondary infections. Natural products accounts for 60% of the total market, making them as a major source of drug discovery. Some of these are sourced from cultivation of microorganisms. This approach started with Fleming's serendipitous discovery of penicillin from the filamentous fungi, *Penicillium notatum* in 1929. His findings have raised the intensive probe of Nature as a source of novel bioactive agents. Biotransformation, which is also known as bioconversion, is a method of chemical alteration of organic complexes by organisms or enzymes. Biotransformation is described as regio-selective and stereo-specific chemical transformations that are performed by valuable enzyme configurations in the biological systems. The transformations result in foundation of novel and useful products that are complex to be achieved through conservative chemical techniques. It is an alternative tool for the growth of sustainable technologies for the production of chemicals and drugs, which means green chemistry.

Key Words: Biotransformation, Green chemistry, filamentous fungi

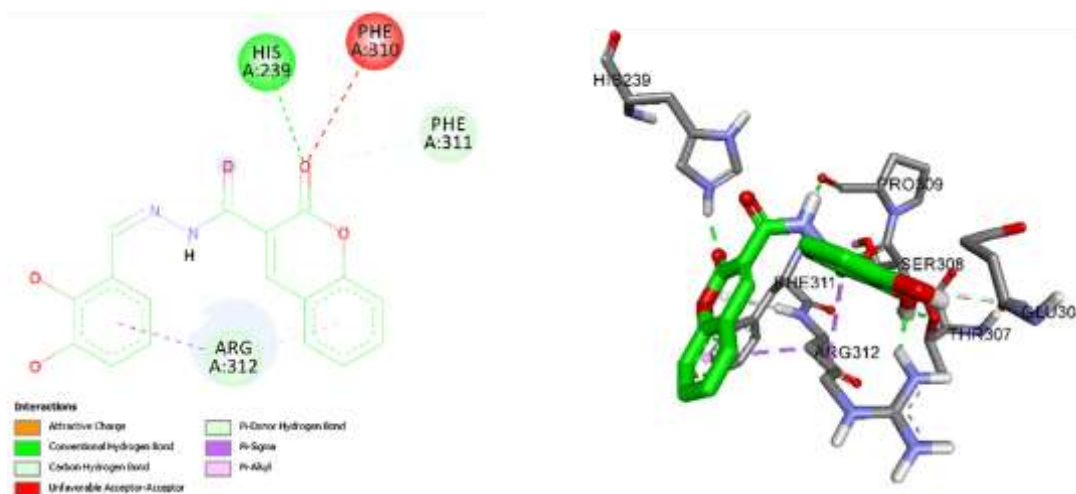
SYNTHESIS, *IN VITRO* α -GLUCOSIDASE INHIBITORY POTENTIAL AND MOLECULAR DOCKING STUDY OF COUMARIN-BASED DERIVATIVES

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Abstract

Type 2 diabetes mellitus is a metabolic disease characterized by hyperglycemia. It is one of the most common noncommunicable diseases, rising to epidemic proportions globally, and undoubtedly one of the most challenging public health problems in the twenty-first century. α -Glucosidases are membrane-bound enzymes that help absorption of glucose in the small intestine. Thus, inhibition of α -glucosidase can significantly decrease the postprandial hyperglycemia after a mixed carbohydrate diet and can be a key strategy in the control of type 2 diabetes mellitus. In this regard, we have synthesized seventeen coumarin-based derivatives (**1–17**), characterized by ¹HNMR, ¹³CNMR and EI-MS and evaluated for α -glucosidase inhibitory potential. Among the series, all derivatives revealed outstanding α -glucosidase inhibition with IC₅₀ values ranging between 1.10 ± 0.01 and 36.46 ± 0.70 μ M when compared with the standard inhibitor acarbose having IC₅₀ value 39.45 ± 0.10 μ M. The most potent derivative among the series is hydroxy analog **3** having IC₅₀ value 1.10 ± 0.01 μ M, which is many folds better than that of standard acarbose. The structure-activity relationships (SAR) are mainly based upon on the substitution pattern of the phenyl part. Molecular docking studies were carried out to understand the binding interaction of the most active compounds.



Keywords: Synthesis, Coumarin, α -Glucosidase inhibitory potential, Molecular docking study, SAR

QUANTITATIVE PHYTOCHEMICAL INVESTIGATION AND ANTHELMINTIC ACTIVITY OF *PSOPHOCARPUS TETRAGONOLOBUS*

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Abstract

Medicinal plants are the preferred option for the treatment of many human diseases including internal helminthic infections. Medicinal plants are better choice to treat helminthic infections because they do not exhibit most limitations observed using modern anthelmintic drugs such as multidrug resistance issues and their corresponding side effects. *Psophocarpus tetragonolobus*, commonly known as winged bean, is a type of legume found in tropical countries such as Malaysia. The present study was aimed to investigate the phytochemicals constituents quantitatively and to assess the anthelmintic activity of various extracts of *P. tetragonolobus* against the earthworm, *Pheretima posthuma*. Adult *P. posthuma* was used as a model to represent parasitic nematodes and trematodes due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings. Methanol and water extracts of fresh and dried *P. tetragonolobus* were obtained using cold maceration method. The concentrated crude extracts were subjected to preliminary phytochemical screening to identify the presence of phytoconstituents and the total phenolic content was determined quantitatively using the Folin-Ciocalteu method. The preliminary screening showed the presence of carbohydrates, proteins, volatile oils, tannins and phenolic phytochemicals. The anthelmintic activity of various extracts of *P. tetragonolobus* at two different concentrations (50 and 100 mg/ml) was assessed against the earth worm, *P. posthuma*. The anthelmintic activity was assessed by determining the time of paralysis (P) and time of death (D) of *P. posthuma*. At the concentration of 100 mg/ml both the methanol and the water extracts of *P. tetragonolobus* displayed non-significant difference ($p > 0.05$) in anthelmintic activity when compared with standard drug, mebendazole (50 mg/ml). In conclusion, *P. tetragonolobus* exhibits significant anthelmintic property which may be due to the presence of tannins as tannins has been associated with their anthelmintic activities.

Keywords: *Psophocarpus tetragonolobus*, winged beans, anthelmintic, total tannin content

F8268-A3-INDUCED ANTI-ANGIOGENICITY IS MEDIATED, IN PART, THROUGH DOWNREGULATION OF VASCULAR ENDOTHELIAL GROWTH FACTOR AND UPREGULATION OF THROMBOSPONDIN

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Abstract

Chemotherapy, which is one of the mainstay of breast cancer treatments, is often compromised by undesirable side effects and cancer resistance. New/ novel anti-cancer agents with optimal therapeutic effect and minimal toxicity are thus desirable. The novel peptide F8268-A3 (patent = US2011/0201642A1), was isolated from the endophytic fungus, *Aspergillus sclerotiorum* strain HAB10R12. Preliminary study found F8268-A3 to down-regulate pro-angiogenic factors that share certain components along VEGF signaling pathway. This study was undertaken to unveil molecular events underlying the potential anti-angiogenic effect of F8268-A3. The 24-hour differential cytotoxicity of F8268-A3 against MCF7 (ER positive) and MDA468 (ER negative) human breast cancer cell lines as well as human umbilical vein endothelial cells (HUVEC) was assessed using the SRB assay. The anti-angiogenicity of F8268-A3 was then examined using the Tube Formation Assay. Immunocytochemical staining for VEGF and TSP-1 in treated breast cancer cells was also performed. F8268-A3-induced anti-angiogenicity in vitro was validated using xenograft nu/nu nude mouse model (male; 9 months-old; n=6/ group) bearing MDA468 tumour. Present findings showed that F8268-A3 inhibited tube formation by HUVEC (67.3%) even at subtoxic dose (0.1 µM). Immunocytochemical staining indicated that F8268-A3 was more selective in down-regulating VEGF in MDA468 (33%) as opposed to MCF7 (15.35%). The anti-angiogenicity was also accompanied by up-regulation of TSP-1 (34.88%) in breast cancer cells. For in vivo study, high (15 mg/kg) and low (1.5 mg/kg) dose F8268-A3 reduced tumour volume and weight by > 20% and > 22%, respectively when compared to the control group. Subsequent immunohistochemical staining showed down-regulation of VEGF (< 69.07%) and up-regulation of TSP-1 (> 77.78%) F8268-A3 exhibited promising potential as a new anti-angiogenic agent. The anti-angiogenic effect could be mediated through interruption of the angiogenic switch that involved suppression of VEGF and increased expression of TSP-1.

Keywords : Anti-angiogenicity, breast cancer cells, endophytic fungus, VEGF and TSP-1

SYNTHESIS AND EVALUATION OF SINENSETIN AS A POTENTIAL ANTI-INFLAMMATORY AND ANTI-ANGIOGENESIS AGENT

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Abstract

Inflammatory conditions such as rheumatoid arthritis (RA) are still in needs of an effective treatment that can cater for less developed societies. The major flavone constituent of the plant, sinensetin, was claimed to be responsible for the bioactivity of *Orthosiphon-stamineus*. This study aimed at verifying the sole contribution of sinensetin to the pharmacological activity of the plant, particularly its anti-inflammatory and anti-angiogenesis activities. The approaches used are threefold. First, a synthetic methodology was developed to supply sufficient quantity of sinensetin for subsequent biological evaluations. All reaction steps gave satisfactory yields (80 to 90%) except for the final cyclization step. Despite the poor yield (36.2%) of the final step, sufficient amount (1.0 gram) of sinensetin was produced. The structure of the product was verified by spectroscopic methods. Secondly, the prepared sinensetin was evaluated for its anti-inflammatory property in the carrageenan-induced paw edema model in Swiss albino mice. The experiments were carried out to test two administration routes of the compound namely: intraperitoneal and oral delivery. The course of the edema was followed at the 1st, 3rd and 5th hour after carrageenan injection. Intraperitoneal sinensetin given at 25 and 50 mg/kg showed efficacy at the later hours of the experiment while this delayed effect was overcome by a higher dose (100mg/kg) with a significant edema reduction of 51% at the 5th hour. Orally given sinensetin at the highest dose significantly reduced the edema by about 30% after 5 hours. The bioavailability of sinensetin was confirmed by measuring the plasma levels of sinensetin in the orally treated mice using quantitative LC-MS which showed the low concentrations of sinensetin (0.025 mg/mL) at higher dose. Third, sinensetin was evaluated for its anti-angiogenesis activity (relevant to RA) using the rat aorta ring assay. Sinensetin significantly inhibited the growth of blood vessels from the rat aorta at concentrations of 60 to 100 μ M. This concentration range was non-toxic to the endothelial cells *EA.hy926*. Mechanistically, sinensetin was shown to inhibit the steps of vessel formation such as tube formation, cell migration, and colony formation of the *EA.hy926*. Taken together, the present data confirms the contribution of sinensetin as the bioactive component in *O. stamineus* in giving its anti-inflammatory and anti-angiogenic activities, providing further support in its development as a potential phytopharmaceutical substance with application in inflammatory diseases such as RA. The successful synthesis of sinensetin may increase its accessibility for this development.

Keywords : Sinensetin, Carrageenan, Hind-paw oedema, Ring aorta assay

DEVELOPMENT OF ACUTE TOXICITY TEST OF SELF NANOEMULSIFYING DRUG DELIVERY SYSTEM (SNEDDS) FOR ANT NEST EXTRACT (*Myrmecondia pendans*)**MUHAMAD IQDAM ANSHORY^{1*}, ENIZA ANGGRAINI¹, TIRTA AJI PERMANA¹, FARIDA HAYATI¹, YANDI SYUKRI¹**¹ Department of Pharmacy Practice, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, Jl. Kaliurang Km.14,5, Sleman, Yogyakarta, +62274898444, Indonesia. Email: iqdmanshory997@gmail.com**Abstract**

Ant nest (*Myrmecondia pendans*) is a native Indonesian plant that is often used as a traditional medicine. Ant nest is rich in flavonoids and tannins where these compounds are found to be antioxidants, so efficacious as anti-cancer. To enhance the bioavailability of Ant nest extract, SNEDDS formula was developed. Due to limited information and scientific publication on the plants, Ant nest products still have been distributed at market acute toxicity test of Ant nest extract should be conducted. The aim of this study was to develop the determination of the toxicity of SNEDDS Ant nest extract formula. SNEDDS contained 1600 mg Ant nest extracts in 10 ml of oil phase made by capryol, propylene glycol, tween 80 with ratio 1:3:6. Acute toxicity test in zebrafish using 80 fish was divided by seven groups, with five concentration groups of 100 mg, 166 mg, 256 mg, 409.6 mg, and 655.36 mg, one solvent group, and one normal group. The fish exposed to the test chemical for a period of 96 hours with observation every 24 hours. SNEDDS evaluation results obtained the particle size of 88 nm, the polydispersity index of $0,178 \pm 0,05$, and zeta potential of $-0,34,3 \pm 0,46$ mV. Stability test of centrifuge test showed that SNEDDS is stable, and a result of freeze-thaw cycle showing good stability as suitable in polydispersity index and zeta potential. The result for 96 hours, acute toxicity test in zebrafish showed there was no LC50 value because there was no number of death in all treatment groups. Overall, the study can be concluded that SNEDDS is not toxic in zebrafish.

Keywords: *Myrmecondia pendans*, SNEDDS, Acute toxicity test, zebrafish

PHYTOCHEMICAL SCREENING AND EVALUATION OF ANTI-INFLAMMATORY ACTIVITY OF *SWIETENIA MACROPHYLLA* SEEDS

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Abstract

Swietenia macrophylla is one of the most important species in *Swietenia* genus and reported that all the parts of plant have wide range of therapeutics uses and to treat diabetes in the indigenous system of medicine. However, there were limited scientific data on its therapeutic applications of *Swietenia macrophylla* seeds and hence an attempt has been made to study the anti-inflammatory activity of different organic extracts of *Swietenia macrophylla* seeds and evaluated the preliminary phytochemical study. The seed extracts were prepared using different organic solvents in the order of increasing polarity (petroleum ether, acetone and distilled water) by using soxhlet apparatus. The anti-inflammatory activity of all the *Swietenia macrophylla* seeds extracts were evaluated at a dose level of [200 mg/kg (bw)], orally by using Carrageenan induced paw oedema method using Indomethacin [10 mg/kg (bw)] as standard compound. All the data was statistically analysed by using one-way ANOVA. The preliminary phytochemical results showed the presence of sterols in petroleum ether extracts and presence of flavonoids, alkaloids, tannins, terpenoids and saponins in the aqueous extract. From the results of the anti-inflammatory activity study, aqueous extract of *Swietenia macrophylla* seeds exhibited superior in its anti-inflammatory activity when compared to other organic extracts and the inflammation was decreased significantly in the fourth and fifth hour after administration of carrageenan. Anti-edematous action of aqueous extracts may be due to the presence of flavonoids, which are postulated to act by impeding arachidonic acid metabolism and production of reactive free radicals. Overall, the different organic extracts of *Swietenia macrophylla* seeds were able to abate some degree of inflammation.

Key words: *Swietenia macrophylla*, soxhlet, carrageenan, anti-inflammatory.

OPTIMISATION OF OINTMENT BASE FORMULA OF SOURSOP LEAF (*Annona muricata L*) ETHANOL EXTRACT TO ULCER CAUSING BACTERIA (*Staphylococcus aureus*) USING *SIMPLEX LATTICE DESIGN* METHOD

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Abstract

Soursop leaf (*Annona muricata L*) has been known to have an active component of phenol compounds. Flavonoids that have antioxidant and antibacterial activities. Ulcers or furunkel is a skin disease caused by bacteria. The objective of this research is to optimize the formula of soursop leaf extract and its action on the bacteria that causes ulcers (*Staphylococcus aureus*) using simplex lattice design optimization method. The extraction process was carried out by maseration method with 70% ethanol as a solvent. Then the obtained extract was formulated into an ointment at 25% concentration. Three different ointment formula was used and compared as the base F1 (Vaselin 7,5g); F2 (Vaselin 3,75g and Adeps Lanae 3,75g) and F3 (Adeps Lanae 7,5g). The resulting ointment was tested for its physical properties and antibacterial activity. The physical property tests consist of spreading, stickiness, pH and viscosity tests. Then the test results from the physical properties and antibacterial activity obtained was inserted into equations using Simplex Lattice Design method. The optimum formula equation was obtained from the highest total response result is formula 1, containing vaseline album and adeps lanae at a ratio of 100%: 0% (Vaselin 7,5g).

Keywords: Soursop leaf, *Annona muricata L*, *Staphylococcus aureus*, Ointment, Simplex Lattice Design

KETAMINE HYDROCHLORIDE AS INTRANASAL ANAESTHESIA IN PET BIRDS**VELLAYAN SUBRAMANIAM AND NUR ANIS AB. HALIM**

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Abstract

Parenteral anaesthesia is an administration of anaesthesia by injection either intravenously, intramuscularly or intraperitoneally. Mortality rate due to parenteral anaesthesia in pet birds is high. Intranasal anaesthesia is a newly developed anaesthesia technique, where a drug is administered through the nasal route to overcome stress and mortality due to painful parenteral anaesthesia. Nasal anaesthesia is not practised in Malaysia for birds. This study investigates the effectiveness and recovery rate of intranasal anaesthesia in pet birds. Ketamine hydrochloride was administered as nasal drops with starting dose of 10 mg. Thirty pet birds were studied. Fifteen of them are prospective data for intranasal anaesthesia, and another fifteen are retrospective parenteral data from previous records. Data were analysed by SPSS 20 using independent T-test. The success of delivery was 100 % with intranasal anaesthesia. No death was recorded. In parenteral anaesthesia, 86.67 % was successful in the administration of the drug, and 13.33 % had complications which led to death. The onset of action for intranasal anaesthesia was slower than parenteral anaesthesia. This is because 100 % of parenteral anaesthesia is delivered into the body system while some of the nasal drops used for intranasal anaesthesia runoff from nostrils or flow into the throat. The recovery rate in birds using intranasal anaesthesia is faster than parenteral anaesthesia. The birds were subjected to less stress and trauma, thus need less time to recover. Recovery rate is better in intranasal anaesthesia as compared to parenteral anaesthesia. Hundred percent of the subjects by intranasal anaesthesia had a normal recovery when compared to parenteral anaesthesia. In conclusion, ketamine hydrochloride used as intranasal anaesthesia in pet birds is as effective as parenteral anaesthesia. Intranasal anaesthesia shows excellent recovery in pet birds and reduces the mortality.

FORMULATION OF NANOPARTICLE OF SERUM ETHANOLIC FRACTION OF STEM (*Jatropha multifida* Linn.) WITH GELATION IONIC METHOD**RISKY GUSLINDAYANI^{1A}, YANDI SYUKRI^{1B}, ANNISA FITRIA^{1C*}**¹ Department of Pharmacy, Faculty of Math and Science, Universitas Islam Indonesia (UII), Sleman, Yogyakarta, Indonesia

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Abstract

Jatropha multifida Linn. is a plant that is empirically used in the treatment of wounds, especially the sap and leaves. Preparation and use of serum nanoparticle preparations containing *Jatropha multifida* Linn has the potential to improve therapeutic effectiveness. One of the methods used in the manufacture of nanoparticles is the ionic gelation method. This study aims to formulate and characterize serum nanoparticles of an ethanolic fraction of *Jatropha multifida* Linn. with ionic gelation method. *Jatropha multifida* linear powder Linn. in extraction with the method of Soxhlet stratified than in fractionation to get an ethanolic fraction. The fractionation results are prepared in the form of nanoparticles subsequently characterized by Particle Size Analyzer (PSA) and Scanning Electron Microscopy (SEM), then formulated in a serum preparation. The evaluation of the serum preparation was performed through organoleptic tests, and stability serum. Nanoparticle formulation of the ethanolic fraction of *Jatropha multifida* Linn. with ionic gelation method showed that nanoparticle size ± 215.0 nm; PDI ± 0.415 ; and potential zeta value ± -30.0 mV. The characterization results show that the nanoparticles were successfully constructed. In the 4-week stability test results can be a stable result of color, odor, homogeneity, and pH. In the test cycling test, the resulting serum preparation is stable, the crystal does not form, and does not undergo syneresis. It can be concluded that the preparation of serum nanoparticles of formula 3 with a concentration of 30% glycerine is the best preparation.

Keywords: Serum nanoparticles, ethanolic fractions, *Jatropha multifida* Linn., ionic gelation method

GOLD NANOPARTICLES ACTIVITY FROM BIOSYNTHESIS OF *Manihot glaziovii* MULL. ARG EXTRACT AGAINST *Pseudomonas aeruginosa* BIOFILM**IKA PUTRI SYAWALIANI^{1*}, ZHAFRAN KHALISH¹, TESHA PARAMITHA¹, BAMBANG HERNAWAN NUGROHO¹, ANNISA FITRIA¹**¹Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, Jl Kaliurang km 14,5 Yogyakarta, +62274898444, Indonesia. Email: ikasyawaliani@gmail.com**Abstract**

Nosocomial infection is a hospital acquired infection often caused by *Pseudomonas aeruginosa*. *Pseudomonas aeruginosa* has the ability to form biofilms so that *Pseudomonas aeruginosa* became one of the bacteria that caused resistance to antibiotics. One of the solutions for this infection problem is to use metal nanoparticles, such as silver and gold. Biosynthesis of gold nanoparticles is widely developed because it is environmentally friendly and easy method. Besides that, gold also has stable chemical properties and low toxicity. The aim of this research is to discover the activity of gold nanoparticles from biosynthesis of leaf *Manihot glaziovii* extract against biofilm activity of *Pseudomonas aeruginosa*. The gold nanoparticles characterization was performed by spectrophotometer and particle size analyzer. Determination of MIC is done by microdilution method. Gold nanoparticles activity against *Pseudomonas aeruginosa* was done by looking at the percentage of destruction *Pseudomonas aeruginosa* biofilm. Destruction of biofilm was done by microtiter plate assay method by staining using crystal violet. In this Research, The best formula of gold nanoparticles is formula 6 (1000 μ l extract and 600 μ l HAuCl₄) with wavelength 548nm, particle size 62.13 ± 0.15 and polydispersity index value 0.24 ± 0.02 . The gold nanoparticles showed inhibitory activity against *Pseudomonas aeruginosa* with minimal 25% of concentration. Gold nanoparticles of *Manihot glaziovii* extract proved to have activity against biofilm *Pseudomonas aeruginosa* especially the destruction of biofilm with percentage destruction 60.15 % with 25% (v/v) concentration of gold nanoparticles; at gold nanoparticles concentration 12,5%(v/v) showed percentage of biofilm *Pseudomonas aeruginosa* is 48,24% while at gold nanoparticles concentration 6,25%(v/v) showed percent destruction of biofilm that is 45,02%. The value of IC₅₀ obtained by 13.20%, it show that with a concentration of 13.20% gold nanoparticles using *Manihot glaziovii* extract can destroy 50% of biofilm *Pseudomonas aeruginosa*

Keyword: Gold nanoparticles, *Manihot glaziovii*, *Pseudomonas aeruginosa*, antibiofilm activity, crystal violet

CYTOTOXIC ACTIVITY OF GOLD NANOPARTICLES CASSAVA LEAF EXTRACT (*Manihot esculenta* Crantz.) ON CERVICAL CANCER CELL (HeLa CELL)

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Abstract

Nanoparticle is a particle formulations that are dispersed at a nanometer size or per thousand microns. Gold nanoparticles are widely used in the medical field because they are non-toxic and not easy to oxidize. Usage of plant extract as bioreductors has become an alternative in the synthesis of gold nanoparticles. This research aims to examine the cytotoxic activity of gold nanoparticles cassava leaf extract (*Manihot esculenta* Crantz) against cervical cancer cells (HeLa). The content of flavonoids contained in cassava leaves has a role as a reducing agent and stabilizer in the synthesis of gold nanoparticles. Characterization of gold nanoparticles includes visual observation of color changes, time of gold nanoparticles using the UV-Vis spectrophotometer, particle size was obtained by PSA, the morphology using SEM and TEM, while the functional group was obtained by using FTIR. Results of this study showed that the best formula is formula 20. The characteristics were a clear yellowish color change to pink, an absorption wavelength of 534 nm, a particle size of 74 nm, PDI value of 0,373 \bar{D} , and a triangle morphology. Out of the 40 formulas with 4 concentrations of extracts (5%, 10%, 15% and 25%), one best formula was obtained in formula 20 with leaf extract concentration of 10% (1000 μ l cassava leaf extract, 1000 μ l HAuCl₄). In formula 20, MTT assay was performed using concentrations of gold nanoparticles cassava leaves extract of 50%, 25%, 12.5%, 6.25%, 3.125%, 1.562%, and 0.781%. The result of cytotoxic test on HeLa cell has obtained a value of Inhibition Concentration (IC₅₀) on gold nanoparticles cassava leaf extract of 35,3047% and IC₅₀ on cassava leaf extract is 83,7643%. Based on the IC₅₀ value, it can be concluded that preparation of gold nanoparticles cassava leaf extract can increase cytotoxic activity against cervical cancer cell (HeLa).

Keywords: Gold Nanoparticles, Cassava leaf, HeLa cell, MTT assay.

THE ACTIVITY OF NANOGOLD USING *MANIHOT ESCULENTA* CRANTZ. EXTRACTS BIOSYNTHESIS AGAINST *ESCHERICHIA COLI* BIOFILMS

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Abstract

Biofilm formation is one of the main problems that can cause infectious diseases. *Escherichia coli* biofilm is known as the main agent causing urinary tract infection. Nanogold has become the newest solution to overcome the formation of *E.coli* biofilm because it can be applied in the development of anti-biofilm strategy with small particle size and non-toxic, so it does not have harmful effects to the body. The use of physical or chemical methods in the synthesis of nanoparticles has a toxic effect, thus the biosynthesis using plants is used to overcome this problem. Cassava leaves contain flavonoids that act as a bioreductor as well as an antibacterial agent. This research aims to find out on nanogold activity of *Manihot esculenta* crantz extract towards *E.coli* biofilms. Biosynthesis of nanogold was done using 10% of cassava leaf extract with HAuCl_4 variation. We tested the destruction of biofilm using violet crystals. Nanogold of extract *Manihot esculenta* Crantz. has a percentage destruction on *E.coli* biofilm of $79,07 \pm 4,03$ at a concentration of 50 μl nanogold. Biofilm destruction activity test obtained an IC_{50} value of 12,3 μl . It can be concluded that nanogold extract *Manihot esculenta* Crantz. has a high percentage of *E.coli* biofilm destruction.

Keywords: Biofilms, Nanogold, *Manihot esculenta* Crantz

DEVELOPMENT AND EVALUATION OF METOPROLOL TARTRATE BUCCOADHESIVE BILAYERED TABLET: EX- VIVO STUDIES

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Abstract

Bioadhesive buccal delivery of drugs is one of the alternatives to the oral route of drug administration, particularly to those drugs that undergo first-pass metabolism. Metoprolol tartrate lowers high blood pressure, controls chest pain, helps treat heart failure and heart attack. The present work was performed to develop and evaluate buccal tablet containing metoprolol tartrate. The metoprolol tartrate buccoadhesive tablets were developed by direct compression method using different ratios of polymers such as HPMC E15, PVP K30 and hydroxypropyl cellulose. Ethyl cellulose was used as backing layer of the tablet. All physicochemical parameters such as thickness, hardness, weight variation and drug uniformity were investigated. The tablet formulations were also subjected to evaluation of drug release in phosphate buffer of pH 6.8. *Ex vivo* studies on bioadhesion, residence time and permeation of the buccoadhesive tablets through freshly cut porcine buccal mucosa membrane were evaluated. *Ex-vivo* residence time of all the prepared metoprolol tartrate tablets showed values between 6.64 ± 0.92 to 7.12 ± 0.03 . Mucoadhesive strength, force of adhesion and bond strengths of the buccal tablets were found to be within the bioadhesive range and was comparable with other GRAS (generally regarded as safe) category polymers studied. A contact time of 4 minutes was used to achieve optimal bucco adhesive strength. The permeation study showed that drug release of more than 80% was achieved at the end of the 5th hour. In conclusion, the present buccal metoprolol tartrate tablet formulations can be suitably developed as an alternative to conventional dosage forms with an added advantage of circumventing the hepatic first pass metabolism.

Keywords: Buccal tablet, Metoprolol Tartrate, ex-vivo bioadhesion, ex-vivo permeation, ex-vivo residence.

ANDROGRAPHOLIDE PERMEATION STUDY THROUGH STRAT-M MEMBRANE USING OLEIC ACID AND PROPYLENE GLYCOL AS THE ENHANCERS**HANI'ATUL KHARIMAH*, OKTAVIA INDRATI, BAMBANG HERNAWAN NUGROHO, PRIMA AULIA PUTRA, SHERINA PUTRI AL-HAKIM****Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, Yogyakarta, Indonesia.
Email: kharimah11@gmail.com****Abstract**

Andrographolide is a major bioactive component of the medicinal plant of sambiloto (*Andrographis paniculata* (Burm. F.) Nees) which has many properties such as anti-inflammatory and anti-diabetic properties. Andrographolide is lipophilic with log P value $2,632 \pm 0,135$, the molecular weight of 350,455 g/ and has a low bioavailability (2,67%). It was indicates that andrographolide possible to be delivered by transdermal route to improve the effectiveness of a drug. Enhancer substance is needed to improve the permeation of andrographolide by increase the permeability of skin barrier. Enhancers that can be used are oleic acid and propylene glycol. This study aims to determine the effect of oleic acid and propylene glycol as the enhancers to andrographolide permeation through Strat-M membrane and also to determine the kinetics of transport of andrographolide using the WinSAAM software. The research was conducted by making andrographolide solution of 3 mg/ml with a variation of oleic acid and propylene glycol. The ratio of oleic acid and propylene glycol (%w/w) in Formula 1 is 5%: 35%, Formula 2 is 10%: 30%, Formula 3 is 15%: 25%, Formula 4 only used 15% oleic acid, Formula 5 only used propylene glycol 40% and Formula 6 without the addition of enhancers. The permeation study was performed using a Strat-M membrane on a vertical Franz diffusion cell. Determination of permeated andrographolide was conducted using HPLC with methanol and water phase (67:33) v/v at 224 nm wavelength. Data was analyzed using WinSAAM software. The results showed that Formulation 5 which only used propylene glycol as enhancer, had the highest cumulative amount of andrographolide release and also had the highest flux value compared to the other formulations. The prediction results using WinSAAM show that andrographolide has three compartment models that follow the first order of drug release.

Keywords :andrographolide, permeation, oleic acid, propylene glycol, Strat-M membrane.

A QUANTITATIVE INSIGHT ON PRECLINICAL AND CLINICAL MEDICAL STUDENTS TOWARD ADVERSE DRUG REPORTING

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Abstract

In Malaysia, the Malaysian Adverse Drug Reaction Advisory Committee (MADRAC) has expanded its pharmacovigilance efforts in various ways in an attempt to reduce ADRs incidents and the associated costs. The activities of MADRAC are coordinated by the Uppsala Monitoring Centre as per the guidelines prescribed by the World Health Organization. Despite the existence of such drug safety monitoring systems, several studies revealed that the under-reporting phenomenon as being due to uncertainty about the drug causing an ADR, difficulty in accessing or compiling the reporting forms and a lack of knowledge of the aim and clinical utility of pharmacovigilance among health professionals. Hence this study was conducted to investigate the knowledge of medical students and their perception on adverse drug reaction (ADR) reporting. A cross sectional study was done on clinical or preclinical medical students using questionnaire during their coursework. There were differences between the two groups in responses relating to adverse drug reaction reporting (preclinical 3.3 vs clinical 3.7; $P < 0.01$) and reasons for not reporting a suspected adverse drug reaction (preclinical 3.4 vs clinical 3.8; $P = 0.001$). Medical students from clinical years had higher knowledge on ADR reporting. The perception on ADR reporting by clinical year students was significantly high.

Keywords: Medical students, Malaysia, pharmacovigilance, adverse drug reaction

A QUALITATIVE STUDY ON COMMUNITY PHARMACISTS' PERCEPTIONS AND EXPERIENCES TOWARDS VALUES, ETHICS AND DECISION-MAKING

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Abstract

Community pharmacists are the principal available health care professionals to people in India to meet any health related issues. They undertake remarkable measures in giving better and revitalized health information to the consumers in India. They are more concentrating on patient care as opposed to concentrating on therapeutic items. India is one of the leaders in health care among developing nations, whereby community practice and pharmaceutical care is commanding in community pharmacy. However, many community pharmacists in India do not seem to give a lot of thought to their own particular conduct whether it is related to individual responsibility or business related unless there are irreplaceable conditions. Hence, a qualitative study was conducted on community pharmacists to explore their perceptions and experiences towards values, ethics and decision-making. The results suggested that community pharmacists are not much bothered about the patient's health though some of the pharmacists take it as a significant factor in ethical decision-making. It is disappointing that community pharmacists emphasize more on physician's order or request than patient's health interests. It is also not surprising that most of the community pharmacists work towards their sales target instead of working towards patients' health care. It was good to know that the community pharmacists may give attention to certain factors while considering an ethical issue, though a very few pharmacists bother about their patient's health. Occasionally community pharmacists were ready to breach the rules for the patients' interest, but in most cases they represented as per the rules and regulations even though it was not certainly in the best option for the patients/customers which is a key aspect in ethical decision-making.

Keywords: Community pharmacy, ethics, decision-making, India, pharmacy values

A DESCRIPTIVE STUDY ON COMMUNITY PHARMACISTS' PERCEPTIONS TOWARDS VALUES, ETHICS AND DECISION-MAKING

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Abstract

India is one of the leaders in health care among developing nations, whereby community practice and pharmaceutical care is commanding in community pharmacy. However, many community pharmacists in India do not seem to give a lot of thought to their own particular conduct whether it's related to individual responsibility or business related unless there are irreplaceable conditions. Hence, a cross sectional study was conducted on community pharmacists to determine their perceptions towards values, ethics and decision-making. The participants were recruited using a multi-stage cluster random sampling. Frequencies and percentages were presented by using descriptive analyses. The normality of the data was verified by using Kolmogorov-Smirnov test and the significant value were below 0.05 suggesting violations of the assumption of normality. Of the 1057 community pharmacists approached to participate in this study, 742 responded by completing the questionnaire. The response rate in this study is 70.19%. The average age of the respondents was around 35 years (35.23 ± 8.68). The average work experience of the respondents was around 13 years (13.54 ± 8.49). The majority were male ($n=486, 65.49\%$). Diploma holders were 79.11% ($n=587$) whereas, 20.88% ($n=155$) were degree holders. About 58% ($n=437$) of the respondents experienced ethical dilemma situations once a week. The current study findings revealed that the pharmacists are facing ethical dilemma at their workplace most of the time.

Keywords: Community pharmacy, ethics, decision-making, India, pharmacy values

THE ASSOCIATION OF ANTICHOLINERGIC DRUGS BURDEN AMONG ELDERLY WITH PARKINSON'S DISEASE ON NON-MOTOR SYMPTOMS

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Abstract

Anticholinergic load amongst elderly may increase the risk of adverse events including falls, delirium and cognitive impairment. However, data on anticholinergic burden are limited in subpopulations, such as in Parkinson's disease (PD) and the occurrence of non-motor symptoms (NMS) among PD populations has markedly increased. The objective of this study was to determine whether the anticholinergic burden was associated with non-motor symptoms in elderly Parkinson patients. We retrospectively retrieved patient's data from the hospital medical record in the Parkinson Clinic between 2016 until 2017. There were 65 patients who satisfied the inclusion standards. Anticholinergic burden was measured using the Duran list and computed using the Anticholinergic Risk Scale (ARS). Prevalence of exposure to anticholinergic medicines was 61.5%, with 15.4% were prescribed at least 1 medication with anticholinergic property, and levodopa (84.6%) and trihexlphenidyl (69.2%) were the highest. Findings showed that duration of PD is the strongest predictor of anticholinergic burden ($p=0.019$). The ARS score of more than 4 is more likely to develop adverse events, and the commonly reported NMS were constipation (44.6%), neuropsychiatric (56.9%) and falls (24.6%). Multivariate regression analysis showed that ARS is associated with falls (OR 1.33; $p = 0.739$). Drugs with anticholinergic properties identified by ARS are associated with adverse events and non-motor symptoms.

Keywords: Anticholinergic, Parkinson's Disease, elderly, ARS score, anticholinergic burden

A RANDOMISED CLINICAL TRIAL FOR HOME MEDICATION REVIEW BY COMMUNITY PHARMACISTS (HMR-CP) AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS (T2DM)

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Abstract

The prevalence of Type 2 Diabetes Mellitus (T2DM) is globally rising at alarming rate. Home medication review conducted by community pharmacists (HMR-CP), is a comprehensive clinical review of a patient's medicines at their home by an accredited community pharmacist upon referral from the patient's Family Medicine Specialist (FMS) or Medical Officer (MO). A well-designed randomised clinical trial is needed to determine the economic and clinical impacts of HMR-CP. Accordingly, this study aims to develop and evaluate HMR-CP programme in optimising diabetes care in Malaysia. The clinical outcomes, humanistic outcomes, cost-effectiveness will be evaluated and the stakeholders' perception will be explored. A total of 166 patients with T2DM from Bandar Pasir Mas Health Clinic (BPMHC) will be randomly assigned into intervention group and controlled group. The primary outcome is the reduction in HbA1c percentage. Four secondary outcomes will be measured: clinical parameters, medication / medical related issues, medication adherence and wastage of medication. This study was divided into 5 stages: pre-intervention, training the community pharmacists, pilot study and interventional phase, economic evaluation and qualitative review from stakeholders. The stage 1 and 2 have been completed and the stage 3 is in the process. During stage 1, the manual and procedure of HMR-CP had been developed and validated. For the stage 2, the community pharmacists have been trained on using the forms related to HMR-CP, the management of T2DM by FMS, usage of drugs and insulin with device. Furthermore, the findings of the impact of HMR-CP through randomised clinical trial on patient's outcomes and payer perspective will also be presented. Such details may enhance the reproducibility of the programme in other community settings or disease management as it provides in-depth understanding of flow mechanism of HMR-CP and its intervention.

Keywords: Home medication review, community pharmacists, type 2 diabetes mellitus, economic evaluation, cost-effectiveness

ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE IN END STAGE RENAL DISEASE PATIENTS ON DIALYSIS IN HOSPITAL SERDANG

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Abstract

Chronic dialysis has a big impact on the patients' health-related quality of life (HRQOL) including decreasing physical functioning and social interaction, increasing risk of depression, causing muscle weakness, restless legs and post dialysis fatigue. This study was conducted to assess the health-related quality of life (HRQOL) in end stage renal disease (ESRD) patients on dialysis in Hospital Serdang. A cross-sectional survey was conducted among the Malaysian ESRD patients who are on haemodialysis (HD) or peritoneal dialysis (PD) in the Dialysis Unit of Hospital Serdang from July 2017 to September 2017. The patients were screened using convenient sampling according to the inclusion and exclusion criteria. The assessment was done by using the Malay and English version of Kidney Disease Quality of Life Short Form 36 (KDQOL-36) self-administered questionnaire. Sociodemographic, clinical and laboratory variables were obtained from e-His live system of Hospital Serdang. Out of 108 patients, 59 were males and the mean age was 48.15 ± 15.48 years old. The result showed that there was no significant difference in the mean score of all components of HRQOL in different types of dialysis. The demographic data which included age, gender, ethnicity, marital status, education level, occupation and monthly financial income did not significantly affect the HRQOL of dialysis patients. Patients with dialysis duration of more than 5 years had better HRQOL compared to other groups. Clinical parameters such as albumin and haemoglobin showed a significant correlation with the HRQOL of the dialysis patients. The HRQOL of ESRD patients on dialysis was impaired due to burden of the kidney disease. Counselling, education and regular monitoring using KDQOL-36 should be considered in improving the QOL among the dialysis patients.

Keywords: ESRD, dialysis, HRQOL, KDQOL-36

IMPACT OF WARD PHARMACISTS IN PREVENTING MEDICATION ERRORS IN MEDICAL WARDS OF A TERTIARY TEACHING HOSPITAL

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Abstract

Medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm. Any medication error that is identified and intervened before it reaches the patient is defined as near miss. The University Kebangsaan Malaysia Medical Center (UKMMC) employed electronic prescribing which was found to have reduced some but not all categories of medication errors. The study aimed to determine the rate of near misses intervened in medical wards by pharmacists. Six pharmacists were directly involved in patient's care in each six medical wards. Medication reconciliation and discharge screening were regularly performed to check on dose and frequency of the medications, duration of treatment, interaction, omission of medications and availability of drugs in formulary. Any discrepancies detected were clarified with the doctor-in-charge either face-to-face, via phone call or messaging application or subsequently recorded in a database. Throughout the year of 2017, 8146 patients have been monitored in medical wards. Total 900 near misses (1 error in every 9 patients) were intervened during patient's stay in the ward (69%, 621/900) and upon discharge (31%, 279/900). Majority of the near misses were found during transcribing stage (55%, 498/900), followed by prescribing stage (41%, 366/900), monitoring stage (2%, 22/900) and drug administration stage (2%, 14/900). Under transcribing stage, the top five most common type of near misses found were wrong dose (26%, 131/498), medication omission (22%, 110/498), wrong frequency (22%, 110/498), wrong drug (16%, 78/498), and wrong duration (5%, 25/498). In conclusion, medication errors can occur at all different stages of drug delivery process. Wrong dose and medication omission were the top two highest errors detected. Ward pharmacists' intervention is therefore important to reduce these medication errors and improve patient's safety in ward.

Keywords: near misses, medication error, ward pharmacists' intervention

KNOWLEDGE, ATTITUDES, AND PRACTICE OF PHARMACISTS AND DOCTORS TOWARD NUTRITION SUPPORT: HOSPITAL RAJA PEREMPUAN ZAINAB II BASED STUDY

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Abstract

Malnutrition is an acute or chronic state of nutrition in varying degrees of malnutrition with or without inflammatory activity led to a change in body composition and diminished function. Nutritional support plays an integral part in the treatment and has a number of clinical benefits. Insufficient education and knowledge about nutrition was identified as the second major barrier for proper nutritional care. This study was to evaluate the knowledge, attitudes and practices (KAP) toward nutrition support in Hospital Raja Perempuan Zainab II (HRPZ II) between healthcare providers. A cross-sectional study that surveyed doctors and pharmacists who were involved in nutritional support from October 2015 – January 2016 were conducted. A validated self-administered questionnaire was distributed to doctors and pharmacists through convenience sampling method. A total of 117 respondents (57 doctors; 60 pharmacists) from various grades completed the questionnaire with a response rate of 72%. 83 respondents were local graduates and 70.9% of respondents were less than 5 years in service. Pharmacists (93.3%) have a better knowledge than the doctors (80.7%) but this was not statistically significant. Local graduates have higher (85.5%) average knowledge compared to overseas graduate (67.6%). In addition, both pharmacists and doctors have ambivalent attitude toward nutrition support (46.7% vs. 52.6%). Significantly more doctors (91.2%) than pharmacists (70.0%) did screening patient's nutrition status on admission. Overall, both doctors and pharmacist showed average knowledge and ambivalence attitude toward nutrition support with good nutrition practice.

Keywords: Nutrition Support, malnutrition, NST

GROUP COUNSELLING ON SUBCUTANEOUS INJECTION TECHNIQUE POSTNATAL PROPHYLACTIC LOW MOLECULAR WEIGHT HEPARIN

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Abstract

In University Kebangsaan Malaysia Medical Centre (UKMMC), clinical pharmacists provide/deliver individualised medication counselling at bedside including device and injection technique of low molecular weight heparin [LMWH]. Each LMWH counselling session usually last for 20 minutes. In the effort of improving maternal health, thromboprophylaxis is currently considered for all postnatal caesarean patients who are at intermediate or high risk, according to the MDG 5: Improve Maternal Health. Since 2016, the demand of LMWH counselling has increased by 10-fold from average of 5 cases to 54 cases per month. However, there is no proportion increase in manpower. In order to ensure continuation of counselling services, group counselling is introduced with collaboration from the nursing and obstetrics and gynaecology (O&G) departments. A workflow and referral sheet were then developed. During working days, doctors from O&G wards (5 wards) will contact pharmacy and fill up a specific referral form. All referrals received are arranged for group counselling session at 3 pm on the same day, in a designated ward. During each session, the referral form will be reviewed by pharmacist for the dose and duration of LMWH prescribed for each patient. Patients will be then taught on self-administration technique, possible side effects and given information leaflet at the end of the session. Pharmacist will then document reviews in the individual referral form. In year 2017, a total of 216 group counselling sessions conducted were attended by 649 patients, giving an average of 3 patients per session, with an estimated total counselling duration of 72 hours. Compared to year 2016 there was a total of 465 session conducted individually with estimated total counselling duration of 155 hours. In the setting of limited manpower, group counselling enables us to meet the increasing demands of counselling services to increased number of patients in order to ensure patient compliance and safety with right administration technique.

Keywords: group counselling, subcutaneous LMWH injection technique, postnatal thromboprophylaxis

ANTIBIOTIC SELF-MEDICATION AMONG PHARMACY STUDENTS, HEALTH SCIENCE STUDENTS AND NON-MEDICAL STUDENTS IN UITM SELANGOR, PUNCAK ALAM KAMPUS

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Abstract

Antibiotic is a medication that is used to treat bacterial infection. The purpose of this study is to assess the knowledge on antibiotic medication and also the antibiotic self-medication behaviour among the students in UiTM Selangor, Puncak Alam Campus. A cross sectional study by using convenience sampling was conducted among undergraduate students from eight different faculties in UiTM Puncak Alam. A total of 430 questionnaires were distributed among the undergraduate students. The response rate was 81.4%. The questionnaire consisted of 30 items divided into 3 parts which were part A for demographic profile, part B for knowledge on antibiotic medication, the part C is for antibiotic self-medication behaviour. The data were analyzed by using Statistical Package for the Social Sciences (SPSS) version 21.0. Chi square test was used to determine the significant association between the tested parameters with p value less than 0.05. The response rate was 81.4%, with the majority of the respondents were female (80.7%). Most of them (88.1%) took antibiotics medications and 38.1% were self-medicated. The primary reason for self-medication was that they have antibiotics at home. Majority of the respondents stated that the choice of antibiotics was based on the previous doctor's prescription. Most took self-medicated antibiotics bought from community pharmacy. Most of them always verify the instructions come with the package and the majority never alter the dosage of antibiotics during the course of self-treatment. The study revealed that students have low knowledge on antibiotic medication. Although antibiotic is a drug that can only be obtained by prescription, there are still students who buy and get antibiotics from community pharmacies without any prescription. Action needs to be taken, to prevent serious problem from arising such as antibiotic resistance.

Keywords: Medication, bacterial infection, behaviour

SELF-MEDICATION PRACTICE AMONG STAFF IN UITM SELANGOR, PUNCAK ALAM CAMPUS**MUHAMMAD ANWAR NAWAB KHAN^{1*}, NOORSY AZWANIE¹**¹ Department of Pharmacy Practice, Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Selangor, Kampus Puncak Alam, Selangor, Malaysia. Email: anwarrkhan2003@yahoo.com**Abstract**

Self-medication is meant by resorting to one or more drugs in order to treat oneself without the authorized prescription. Self-medication is also defined as the choice and consumption of medicines by individuals to treat self-diagnosed symptoms. The study aimed to know the self-medication experiences among staff in UiTM Selangor, Puncak Alam Campus, and to find out the associations of knowledge and perception with the practice of self-medication. The research was conducted using questionnaires. The questionnaires consist of three parts, which comprises of questions to collect demographic data, self-medication experiences of target population, and the respondents' practice of self-medication. The response rate was 94.4%, with the majority of the respondents were female (83.0%), age between 51-65 (52.9%) and Malays. Most (73.9%) had self-medicated over the last one year. The majority of the respondents stated that pharmacist (57.7%) was the main source of information, followed by doctors (30.7%). Near half (49.7%) of the respondents read the information leaflet when taking medication that are not prescribed by doctors. The most common treated symptoms using over-the-counter medicine was headache, followed by cold, cough, sore throat, toothache, joint and muscle ache, stomach or digestion problem and skin diseases. About 45.5% respondents consulted doctors when symptoms were worsening and 11% consulted doctor when usual treatment was not effective. Qualification, gender and ethnic group were not the significant factors to the practice of self-medication. Most respondents were practicing a responsible self-medication way. To maintain a responsible practice of self-medication, healthcare professionals such as physicians and pharmacists must provide adequate and genuine awareness and information to patients to increase public health promotions. Besides that, as a person practicing self-medication, information about self-medication must be derived from a reliable source.

Keywords: Self-medication, prescription, consumption, symptoms, experiences

AWARENESS AND KNOWLEDGE ON EPILEPSY AMONG STUDENTS IN UiTM PUNCAK ALAM CAMPUS

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Abstract

Epilepsy is a disease when there are hyper-excitability of neuron and electrical storm forming in the brain. Epilepsy is most associated with stigma among the society and the patient often exposed to insult and humiliation due to lack of awareness and knowledge of epilepsy. This study is done in UiTM Puncak Alam to identify the level of awareness and knowledge of epilepsy among undergraduate students from seven different faculties. The questionnaire was divided into four part: demographic, awareness and previous experience of epilepsy, knowledge of epilepsy and knowledge of care during epileptic seizure. The questionnaires were distributed evenly between the seven faculty: faculty of pharmacy, faculty of health science, faculty of accountancy, faculty of business management, faculty of hotel and tourism management, faculty of art and design and faculty of education. The result was analyzed through the Statistical Package for the Social Sciences (SPSS) version 22.0 and Microsoft Excel. From the finding, majority of the students were Malay (95.7 %) and female (81.6 %) were higher compared to male (18.4 %) students. About 93.8 % of students never heard about epilepsy and only 7.6 % had attended a seminar or talk about epilepsy. Only 11.1 % of students have a family member who is diagnosed with epilepsy. In view of knowledge on epilepsy, only 26.2 % know the cause of epilepsy, 62.4 % didn't think epilepsy is a transmittable disease and 34.6 % did think epilepsy is heritable. Although 94.3 % of students agreed to keep away objects from patient experiencing an epileptic attack but only 7.3 % disagreed on putting something into the mouth of patient during seizure attack. In general, the level of awareness and knowledge among students in UiTM Puncak Alam was favourable.

Keywords: Epilepsy, awareness, knowledge

INFLUENCE OF PHARMACEUTICAL ADVERTISEMENT ON KNOWLEDGE AND MEDICATION USE AMONG STUDENTS IN UNIVERSITI TEKNOLOGI MARA, PUNCAK ALAM, MALAYSIA

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Abstract

Studies have shown that pharmaceutical advertisement has an important effect on the drug consuming behaviour of patients. Assessment of influence of pharmaceutical advertisement among UiTM students is important as this would help to enhance current teaching-learning process. The influence of pharmaceutical advertisement among students in Universiti Teknologi MARA (UiTM) however, remain unknown. The present study was undertaken to assess the influence of pharmaceutical advertisement on knowledge and medication use to students. A 57-item questionnaire consisted of six parts was administered to UiTM students from March to May 2017. Part A consisted of sociodemographic items while part B to F were validated questions to elicit knowledge and medication use. A total of 200 students completed the questionnaire whereby the majority were female (114/200,57%) and year 3 students (82/200,41%) from the health-related programmes (119/200, 59.5%). Data collected were entered and analysed using SPSS version 20. Based on the knowledge score, the majority scored fairly (119/200, 59.5%). Both positive and negative responses were obtained from students regarding pharmaceutical advertisements. However, students were not easily perceived by pharmaceutical advertisements and promotions and they still rely on advice from the healthcare professionals in order to select quality drugs for use. Pharmaceutical advertisements do not necessarily bring negative influence on knowledge and medication use. Learning objectives in teaching should emphasise on evidence-based medicine targeting towards the vulnerable group of students from the health-related programmes.

Keywords: Pharmaceutical advertisement, influence, knowledge, medication use

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Storing medications at home is a common practice due to many reasons. These include storing it for regular consumption, in case of emergencies, or storing leftover medicines. A proper storage location is vital to ensure the stability of the medicines. This study aimed to investigate the public knowledge, awareness and practice on medications storage. The instrument was adapted from Obitte *et al.*, 2009; See *et al.*, 2014; and Dawood *et al.*, 2017. The self-administered questionnaire consists of 28 items which covered demographic backgrounds (10 items), knowledge (8 items), awareness (2 items) and practice (8 items) on medication storage. Adults aged 18 and above who understands Malay or English in Kota Bharu, Kelantan were invited to participate in this study. Those who do not consume any medications or supplements were excluded from this study. Convenience sampling was adopted and participation was voluntary. Respondents were given 10 minutes to complete the questionnaire. The results were analysed using Statistical Package for the Social Sciences (SPSS) version 21.0. Most respondents answered correctly on the items of 'store in a cool place' label on the medications (71.9%), the needs to store certain medications in a refrigerator (80.1%), the damage heat and sunlight can cause to the medications (78.4%) and the suitability of the bathroom cabinet for storing medications (61.4%). Most respondents aware that there is a recommended storage for each dosage form (63.2%) and the effect on the location of storage to the medications potency (69.6%). Most of the medications were kept inside or top of cupboard for solid (60.0%), semisolid (63.2) while liquid medications were stored in the refrigerator (82.4%). Respondents were generally aware of the recommended medicine storage for each dosage forms and it influences on medicine potency. Most respondents kept medicines at appropriate locations.

Keywords: Medication storage, knowledge, awareness, practice

A CASE CONTROL STUDY ON THE CLINICAL CHARACTERISTICS AND RISK FACTORS OF ALLOPURINOL INDUCED CUTANEOUS REACTION IN HOSPITAL SULTANAH AMINAH JOHOR BAHRU

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Abstract

Allopurinol is a drug commonly used in long term gout prophylaxis in management of high plasma uric acid. Nevertheless, it is recognized as a high risk culprit drug in inducing adverse drug reaction (ADR). Allopurinol has accounted for 34% of all reported ADR in year 2014 as reported by National Pharmaceutical Control Bureau (NPCB), Malaysia. This study is to determine the clinical characteristics of allopurinol hypersensitivity reaction, to evaluate the rate of reaction of allopurinol hypersensitivity reaction and to identify the potential risk factors associated with allopurinol induced cutaneous reaction. A retrospective study involving 57 patients who were referred to Dermatology Clinic with allopurinol induced cutaneous reaction; whose demographic data and starting dose were studied and compared to 114 allopurinol tolerant (control: case ratio =2:1) between year 2005 to 2015. Clinical characteristic, rate of reaction and potential risk factor leading to the cutaneous reaction were investigated. The rate of cutaneous reaction was 2.28%. Median time from starting allopurinol to the occurrence of allopurinol induced cutaneous reaction was 27 days (range 1–120 days). Clinical characteristic of allopurinol cutaneous reaction includes fever, eosinophilia, elevated ALT and serum creatinine, manifestation of cutaneous reaction such as purpura, blister and mucosa involvement with different severity and mortality outcome. Logistic regression model was used to determine the association between potential risk factors including age, gender and ethnicity and the occurrence of allopurinol induced cutaneous adverse drug reaction. The logistic regression model was statistically significant, $\chi^2(4) = 30.77$, $df=5$, $p < .001$. The model explained 22.9% (Nagelkerke R^2) of the variance in allopurinol-related cutaneous reaction and correctly classified 70.8% of cases. The effect of gender is significant and positive, indicating males were 4.03 (CI:1.84-8.84) times more likely to have allopurinol cutaneous reaction than females. Increasing age was associated with a reduction in the likelihood of developing adverse cutaneous reaction. There is no statistical significant association between ethnicity and cutaneous reaction occurrence. Severe outcome of allopurinol cutaneous reaction suggests the need for monitoring of sign and symptoms of allopurinol hypersensitivity. It is advisable to discontinue allopurinol at the first appearance of skin rash or other signs that indicate an allergic reaction.

Keywords: Allopurinol, cutaneous reaction, hypersensitivity

THE IMPACT OF IMPLEMENTING ANTIMICROBIAL STEWARDSHIP PROGRAMME IN HOSPITAL QUEEN ELIZABETH II: A DESCRIPTIVE STUDY

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Abstract

Antimicrobial stewardship (AMS) is a coordinated program involved in monitoring the appropriate use of antimicrobial therapy. Primarily, the goal of AMS is to optimise clinical outcomes while minimising the unintended consequences of antimicrobial use. This will indirectly reduce health care costs without adversely affecting the quality of care. In Hospital Queen Elizabeth II (HQE II), the AMS was started since January 2016. This study evaluated the impact of AMS Program in HQE II by comparing: the antimicrobial consumption and cost for colistin, imipenem, ertapenem, meropenem, linezolid and vancomycin injection between Jan-Dec 2015 (Pre-AMS) and Jan-Dec 2016 (Post-AMS) and the number of antimicrobial resistance cases between that periods. This is an observational study that included all admitted patients into HQE II except paediatric ward and full paying patient ward. Defined Daily Dose (DDD) per 1000 patient formula was used to calculate the total usage of antimicrobials. The cost for the usage of antimicrobial was estimated according to the price list of HQE II inventory for 2017 and the cost metric that was used is cost per 1000 patients-days for specific antimicrobial. For general wards, there was a reduction in the antimicrobial consumption and the cost for all the antibiotics studied in 2016 compared to 2015. The DDD for colistin decreased from 10.365 to 2.74 ($p < 0.05$) and 40.905 to 20.925 ($p < 0.05$) for meropenem. Meanwhile for the cost of antimicrobial, there was a significant reduction from RM 24852.00 to RM 6582.40 ($p < 0.05$) and from RM 29497.00 to RM 14915.00 ($p < 0.05$) for colistin and meropenem respectively. The number of cases of antibiotic resistance was also declined in 2016 when compared to 2015. The implementation of AMS program in HQE II was shown to have a positive impact in reducing the antimicrobial consumption and the cost.

Keywords: Antimicrobial stewardship program, antibiotic, resistance

RISK FACTORS OF PACEMAKER IMPLANTATION INFECTION: A SINGLE CENTRE EXPERIENCE

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Abstract

Implantation of permanent pacemaker (PPM) is a device treatment for various brady-arrhythmias. Several risk factors have been associated with infection of PPM implantation, including peri-procedure antibiotics use. The objective of this study is to determine the associated factors of PPM implantation infection. A retrospective case note review of all patients whom underwent PPM implantation from January 2011 to July 2013, at a tertiary regional cardiac centre in East Malaysian state of Sabah was conducted. A checklist, which includes patient & procedural risk factors, and peri-procedural antibiotic(s) use, was used for data collection. Clinical surveillance of infection at discharge and at day-10 were carried out as part of routine practice. A total of 112 patients were included: 12 (10.7%) had PPM infection and 100 controls. All patients received pre-implant prophylactic use of antibiotics, varied at discretion of implanting clinician. Univariate analysis showed post-implant administration of Cefoperazone was associated with lower infection rate (OR 0.198: 95% CI 0.05-0.79; $p < 0.05$); Longer procedure duration was associated with higher infection rate (OR 1.016: 95% CI 1.004-1.028; $p < 0.05$). Multivariable logistic regression showed procedural duration (OR 1.016: 95% CI 1.003-1.029; $p = 0.015$) and post-implant Cefazolin (OR 0.196: 95% CI 0.046-0.842; $p = 0.028$) were independent factors for PPM infection. Pre-implant antibiotic choice was not significantly associated with infection rate. Implant infection was associated with longer procedural duration. This may be associated with procedural complexity, operator experience and choice of antibiotics, which deserve further study, in order to formulate preventive strategy to minimise risk of PPM infections, including antibiotic policy.

Keywords: Pacemaker, implant infection, antibiotic prophylaxis

APPROPRIATENESS OF DEEP VEIN THROMBOSIS (DVT) PROPHYLACTIC USE AMONG MEDICAL INPATIENTS: A DVT RISK ALERT TOOL (DRAT) STUDY

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Abstract

Increasing incidence of Venous Thromboembolism (VTE) has complicated treatment courses for hospitalized patients. Despite recommendation to support deep vein thrombosis (DVT) risk assessment and appropriate use of prophylaxis in medical inpatients, it is often neglected or prescribed unnecessarily by the clinicians. This study aimed to assess and compare the appropriateness of DVT prophylaxis prescribing between usual care versus a pharmacist-driven DVT Risk Alert Tool (DRAT) intervention among hospitalized medical patients. A prospective pre and post intervention study was conducted from November 2015 to November 2016 among medical inpatients at a secondary care hospital in Johor, Malaysia. DVT and bleeding risks were stratified using validated Padua Risk Assessment Model (RAM) and International Medical Prevention Registry on Venous Thromboembolism (IMPROVE) Bleeding Risk Assessment Model. Pharmacist-driven DRAT was developed and implemented in the post interventional phase. DVT prophylactic use was determined and its appropriateness was compared between pre and post study. Overall, 286 patients (n= 142 pre-intervention versus n= 144 post-intervention) were conveniently recruited. The prevalence of DVT prophylactic use among hospitalized medical patients was 10.8%. Appropriate use of DVT prophylaxis increased from 64.8% to 68.1% post DRAT implementation. Of note, among high DVT risk patients, DRAT intervention was observed to be a significant predictor of appropriate thromboprophylaxis use (14.3% versus 31.3%; odds ratio = 2.74; 95%CI: 1.10 to 6.80; p= 0.030). The appropriateness of DVT prophylactic use increased after implementation of pharmacist-driven DRAT intervention, particularly among those of high risk medical inpatients. Our study suggested that a method relying on integrated risk stratification with prophylaxis recommendation checklist may be an effective approach for the improvement of rational DVT prophylaxis prescribing.

Keywords: Deep vein thrombosis, appropriateness, prophylaxis, risk stratification, intervention

IMPACT OF ANTIMICROBIAL STEWARDSHIP PROGRAM (ASP) ON VANCOMYCIN USE: A DRUG UTILIZATION EVALUATION (DUE)

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Abstract

Drug Utilization Evaluation (DUE) is a structured method to monitor vancomycin utilization pattern. Studies have showed that irrational use of vancomycin may render ineffective treatment and pose risk of vancomycin resistance. Implementation of Antimicrobial Stewardship Program (ASP) is hence an essential multidisciplinary level evidence-based approach for healthcare institutions to guide the judicious use of antimicrobials. To date, information on the impact of ASP towards vancomycin use is scarce. This study aimed to conduct and compare vancomycin DUE before and after ASP implementation in a Malaysian secondary care hospital. A retrospective observational pre-post study was conducted from year 2013 to 2016 among hospitalised patients aged 12 years and above who received intravenous vancomycin therapy. Pertinent data on vancomycin use was retrieved from patients' medical records. An ASP, adopting the persuasive and restrictive approaches, was developed and implemented. Vancomycin usage trends were evaluated and compared. A total of 32 patients (n=12 pre-ASP versus n=20 post-ASP) were recruited. Appropriateness of vancomycin use improved from 91.7% to 95.0%. The number of patients received loading dose increased from 41.7% to 55.0% while incorrect initial dose reduced from 18.2% to 11.1% post-ASP implementation. Rate of attainment of effective corrected trough level increased from 41.7% to 70.0% whereas appropriate kidney function assessment increased from 66.7% to 90.0%. Median time for microbiological clearance dropped from 16 days (IQR 7.25, 22.50) to 10 days (IQR 7.00, 15.50) post study with median duration of vancomycin therapy reduced from 15 days (IQR 7.75, 20.25) to 10 days (IQR 6.25, 14.75). Our study revealed that ASP formed an effective collaboration among healthcare providers that improved vancomycin use while providing safe care. Future studies with longer duration are warranted to monitor sustainable impact of stewardship efforts.

Keywords: Antimicrobial stewardship program, vancomycin, drug utilization evaluation, resistance

PHARMACOVIGILANCE OPPORTUNITIES AND CHALLENGES IN THE GULF REGION

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Abstract

Pharmacovigilance (PV) is a growing challenge in the Gulf Cooperation Council (GCC) countries, which drove them to establish their own PV systems to address the safety concerns of the locally marketed products. The threat facing PV systems is the issue of underreporting and lack of awareness from both the healthcare professionals (HCPs) and the public. Therefore, this study was carried out to assess the Knowledge, Attitude and Practice of HCPs towards PV in the GCC region and to evaluate the current challenges and drivers for the success of PV in the Gulf Region. Convenient sampling was used in this study. An online questionnaire was designed and delivered using SurveyMonkey®. Social Network Sites (SNSs) have been targeted to reach out to the largest number of participants in the GCC region. The total number of the participants was 568. However, the total number of completed responses was 256 responses. Two-thirds of participants (n=170, 66%) were from the government sector, while the rest (n=87, 34%) were from the private sector. About two-thirds of respondents came across ADRs at their practice (n=163, 63.7%), while almost all of respondents (n=250, 97.6%) either agreed or strongly agreed that reporting of ADRs is necessary. When the participants were asked to state if they agree that ADR reporting is an ethical obligation and a professional duty, the majority of those who responded (n=199, 77.7%) agreed to that statement. Two-thirds of respondents (n=172, 67.2%) stated that lack of knowledge and information was the mostly challenge facing the successful implementation of PV services and ADR reporting practice. The main drivers stated by respondents for implementing a successful PV system were medical expertise followed by an effective legislation and guidelines (n=162, 63.3%, n=152, 59.4%) respectively. However, about one third of respondents claimed lengthy reporting time and difficulty to relate the drug to an adverse event (n=89, 34.8, n=91, 35.5%) respectively were the most demotivating factors to report ADRs. This study showed an opportunity for the Arab league, the GCC and Regulatory authorities (RAs) to advocate ADR reporting and also provided an opportunity for HCPs to communicate challenges and obstacles in their practices.

Keywords: Pharmacovigilance, knowledge, attitude, ADR reporting

T2DM PATIENTS' ADHERENCE TO REFILLS AND MEDICATION: A COMPARISON BETWEEN TELEPHONE AND COLLECT SERVICE AND CONVENTIONAL COUNTER SERVICE IN A HEALTH CLINIC

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Abstract

Pharmacy Value Added Services (PVAS) has been implemented in Malaysian public healthcare to improve patients' accessibility to follow-up medication supplies, hence improve adherence. Studies have shown that PVAS increase patient satisfaction and reduce waiting time but no study investigated the adherence status of patients using PVAS, which is an important indicator to measure the effectiveness of this service. The objectives were to compare medication and refill adherence score in type 2 Diabetes Mellitus (T2DM) patients with Conventional Counter Service (CCS) and Telephone and Collect (T&C) service and to determine the predictors associated with better adherence status. A comparative cross-sectional, single centred, self-administered based survey was conducted in one health clinic under Klang District. Patients attending the outpatient pharmacy, dispensed with at least one type of T2DM medication for at least 6 months were conveniently selected. The survey, adopted from a previous study, contained 28 items: demographic characteristics (9-item), medication refill supply and collection (7-item) and Adherence to Refill and Medication Scale (ARMS) (12-item). Data was analysed using SPSS software version 24 for 204 patients. T&C group shown better ARMS score mean (14.47 ± 2.37) compared to CCS group (16.67 ± 4.44) ($p < 0.001$). Retired patients, shorter travelling distance to pharmacy and patient asking someone else to collect their medication were significantly associated with better adherence status. Patients from T&C group demonstrated significantly better adherence to medication and refill showing that PVAS could be an effective option. Further work is needed to assess its generalizability to other chronic diseases and to various types of healthcare settings in Malaysia.

Keywords: Adherence, refill prescription, Pharmacy Value Added Services (PVAS), ARMS

THE PREVALENCE OF HYPERSENSITIVITY REACTIONS TO ANTIVENOMS ADMINISTERED IN TERTIARY HOSPITAL FROM 2013 TO 2016

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Abstract

Snakebite is an important medical emergency that can cause morbidity and mortality. Antivenom remains as the only specific treatment for snakebite, however, its use is associated with hypersensitivity reactions that can cause life-threatening (anaphylaxis) condition to the patient. Allergic reactions (Hypersensitivity Reactions) are inappropriate responses of the immune system to a normally harmless substance. The incidence of hypersensitivity reactions to antivenoms administered, the types of antivenoms reactions, the management and outcomes of antivenom reactions have been studied. There were 36 patients included in this study. Patients data were retrieved from the electronic medical record through the hospital computerized system. Some data were taken from the medical record unit. Descriptive data were presented with frequency and percentage where appropriate and illustrated in the form of graph, pie chart and table. Statistical analysis tests used were chi-square, t-test, and Mann-Whitney test when appropriate with p-value <0.05 (2-tails) is considered significant. Out of 36 patients, 22 (61.1%) patients developed hypersensitivity reactions and all had an early types of reaction. No patient with late (serum-sickness) reaction. These early hypersensitivity reactions were caused by the administration of 1/3 (33.3%) King cobra antivenom, 3/3 (100%) Malayan pit viper antivenom, 6/11 (54.5%) Neuro polyvalent antivenom, 5/5 (100%) Hemato polyvalent antivenom and 7/14 (50%) Cobra monovalent snake antivenoms. Out of 22, 12 (55%) patients had moderate to severe anaphylaxis, followed by 9/22 (41%) patients had mild reactions of itchiness and rashes. In terms of ADR reporting was poor, as only 1/22 (4.5%) was reported. In conclusion, the incidence of early hypersensitivity reactions to snake antivenom is high which is 61% and late (serum sickness) reaction is uncommon. There is a need for training in the form of Continuing Medical Education to the physicians, pharmacists or other healthcare practitioners for better diagnosis and reporting of adverse drug reactions.

Keywords: Snake Antivenom, Hypersensitivity Reactions, Early Reaction, Serum sickness, Adverse Reaction

AWARENESS AND KNOWLEDGE OF ADULT SUDANESE HYPERTENSIVE PATIENTS**SAMAH HUSSEIN^{1*}****¹ Department of Pharmacy Practice, Unaizah College of Pharmacy, Qassim University, Qassim, Saudi Arabia.****Email: samah-173@hotmail.com****Abstract**

Sudan is among the countries with high prevalence of hypertension. The present study aimed to assess the understanding of hypertension and its complications among the adult hypertensive patients in Khartoum state, the capital of Sudan. This study was a cross-sectional, clinic-based, descriptive survey targeting patients being treated for essential hypertension. The data were collected from June to July 2009, using a 34-items questionnaire filled in during the interviews with the participants of the three largest health care centres in the state of Khartoum. The investigator distributed 170 questionnaires. SPSS version 17 was used to analyse the data. Of the 170 patient surveyed, 155 responded with an overall response rate of 91%. The results showed that 48.4% of the patients have been diagnosed with hypertension for more than five years. 60% of the respondents were male. At the time of the research, all participants were on antihypertensive treatment. Most patients had basic knowledge and understanding of the term "Hypertension" but lack of information on causes, complications, and risk factors. The participants indicated insufficient knowledge of the relationship between hypertension and physical activities, other health conditions, dietary habits, and lifestyle modifications. Moreover, 42% of the subjects reported no knowledge on their personal blood pressure readings, and 62% were not aware of the need to seek for a healthcare professional for blood pressure management. Considerable barriers in awareness hypertension were revealed by this study, which were further aggregated by poor understanding of the importance of timely professional care from qualified physicians. To enhance general awareness about hypertension, a sustained and expanded public educational programme may be beneficial for improvements in awareness and knowledge about specific aspects of hypertension, including risk factors, complications, and preventive measures.

Keywords: Hypertension, blood pressure, awareness, risk factors, obesity, Sudan

A REVIEW ON GLYCAEMIC CONTROL AMONG PATIENTS WITH DIABETES MELLITUS IN SAUDI ARABIA

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Abstract

Diabetes mellitus is a leading cause of death and disability worldwide. At present, 150 million people worldwide are estimated to have diabetes and this number is likely to increase to 300 million by 2025. The aim of this review was to describe the glycaemic control and the factors affecting it among diabetic patients in Saudi Arabia. The studies undertaken on glycaemic control among diabetics and the factors affecting glycaemic control among patients with diabetes mellitus in Saudi Arabia were retrieved from Google Scholar and Saudi Digital Library database including Medline and other electronic sources. The results showed that the proportion of patients with poor glycaemic control ranged from 49% to 67%. 90% of patients were older than 40 years of age and were either overweight or obese. Female diabetics were found to be younger than their male counterparts. The poor glycaemic control was more prevalent in female patients when compared to male. However, the surprising element was that the patients' educational background had no impact on the glycaemic control but the patients with high educational level exhibited better adherence and hence compliance in glycaemic control. Control of diabetes mellitus is still a major concern in Saudi Arabia. From this review, we concluded that prevalence of poor glycaemic was higher in patients with age 40 years or more and more females presented with poor glycaemic control as compared to males. However further studies are needed to explore the factors leading to poor glycaemic control and how to manage it.

Keywords: Diabetes mellitus, glycaemic control, Saudi Arabia

AVAILABILITY OF MUSIC THERAPY IN DEMENTIA CARE: A QUALITATIVE FOCUS GROUP STUDY AMONG THE PHARMACISTS

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Abstract

Dementia is a syndrome due to disease of the brain, usually of a chronic or progressive nature, in which there is impairment of multiple higher cortical functions, including memory, thinking, orientation, comprehension, calculation, learning capacity, language and judgment. More than 50 % of people living with dementia are residing in the countries with low to middle income. The annual incidence rate of dementia in Malaysia was 0.02 % in the year 2005, and is predicted to increase to 0.126 % and 0.454 % in 2020 and 2050, respectively. Music therapy has found its niche among the practices of alternative and complementary therapies available for the management and care of the persons living with dementia. The availability of music therapy as a behavioural therapy is itself ready to ensure a better provision of dementia management in Malaysia. This study examined the availability of music therapy in hospital and community pharmacies in Malaysia with respect to dementia treatment and/or prevention through face-to-face and online surveys. Pharmacists or pharmacy in Malaysia did not provide or promote music therapy as a part of their services. The pharmacists were however willing to venture into music therapy for dementia management. The majority of them regarded music therapy as a promising field of healthcare division in Malaysia.

Keywords: Music therapy, dementia, pharmacist

VALIDATION OF ENGLISH VERSION OF DIABETES MANAGEMENT SELF-EFFICACY SCALE (DMSES) AMONG ADOLESCENT DIABETES MELLITUS PATIENTS IN BANGLADESH

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Abstract

The global burden of diabetes mellitus (DM) is substantial, especially in developing nations. The prevalence of Type 1 DM in Bangladesh at 4.2 new instances/100,000 children/ year in 2013. Managing DM is challenging given the chronic nature, complexity of the disease management and the multiple daily self-care decisions that need to be made, in particular among adolescent DM patients. Low self-efficacy level among the adolescent DM patients could have been the underlying reason for poor daily management of blood glucose, leading to poor glycaemic control. A 20-item Diabetes Management Self-Efficacy Scale (DMSES), assesses the extent of confidence of respondent in managing his/her blood glucose level, foot care, medication, diet and level of physical activity, is one of the most commonly used instrument. However, it has not been validated for use in the Bangladeshi adolescent DM patients. Accordingly, this pilot study aimed to describe preliminary validation of the English version of the DMSES among the Bangladeshi adolescent DM patients. Face and content validity was evaluated by three endocrinologists and patients in Bangladesh. A total of 60 Bangladeshi adolescent DM patients who can communicate in English were invited to participate in this study. Responses were rated on an 11-point scale; 'Cannot do at all' (0), 'Maybe yes/maybe no' (5) and 'Certain can do' (10). All responses were then summed to produce a single score, ranging from 0 to 200, for self-efficacy. Higher scores indicating greater self-efficacy. Reliability of DMSES was assessed using Cronbach's alpha while discriminant validity was assessed through the association of DMSES score with glycated haemoglobin (HbA_{1c}) level (by employing Spearman's rank correlation test). Findings revealed that patients with lower HbA_{1c} levels ($p = 0.008$) reported higher self-efficacy. Cronbach's alpha coefficient obtained were 0.739, indicating good reliability of the DMSES among the Bangladeshi adolescent DM patients.

Keywords: Self-efficacy, adolescent, diabetes

PARENTS' KNOWLEDGE, ATTITUDES AND BELIEFS OF CHILDHOOD FEVER MANAGEMENT IN MALAYSIA

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Abstract

Fever is one of the most common presenting complaints in childhood as many as one third of all paediatric consultations in general practice. Up to date, no study has been done to assess parents' knowledge, attitudes, and beliefs on childhood fever management in Malaysia. This study was to determine Malaysian parents' knowledge, attitudes and beliefs in the management of fever in children. A cross-sectional study of multiracial parents in Federal Territory of Kuala Lumpur from February 2017- May 2017 were conducted. A validated self-administered questionnaire was distributed to parents through convenient sampling method. A total of 155 parents were recruited as participants in this study. Data were collected and analyzed as descriptive analysis (e.g. frequency and percentage of the response to each question). Cronbach-alpha analysis was used to measure the reliability of data collected. 14.2% of parents were Malay, 69% were Chinese, and 16.8% were Indian. 61.3% of the parents had moderate knowledge level on childhood fever management. Parents' with monthly household income > RM5000 (88.9%) did not believe that greater price of medicine could give a better efficacy in children's fever treatment whereas those with household income ≤ RM1000 (68.4%) believed such factor. All Malay respondents (100%) believed that traditional medicine played an important role in relieving childhood fever. Most parents (43.2%) were perceived the harmful effects of fever as brain damage. 79.4% of respondents claimed that their feverish children did not develop into complication. Interestingly, it was shown that 47% of surveyed parents were somewhat worried in dealing with childhood fever. Parents in Kuala Lumpur showed a lack of knowledge on childhood fever and disagreed that the price of medicine was proportionally reflecting its efficacy. Parents who perceived fever as a serious threat or who had witnessed their children's fever complication tend to be over-concerned and develop fever phobia.

Keywords: Fever, Malaysian parents, Knowledge, fever management

AWARENESS OF STATINS USAGE AMONG PEOPLE WITH TYPE 2 DIABETES: A GENDER-BASED STUDY

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Abstract

Dyslipidaemia is one of the prominent risk factors for cardiovascular disease (CVD). Cardiovascular disease is also the leading cause of death in Malaysia. The study conducted to compare the knowledge, attitude, and practice of females and males about statin utilization in diabetic dyslipidaemia therapy. A cross-sectional study was done at Penang General Hospital, from January to July 2017, Malaysia. A total of 200 pharmacists and physicians were enrolled using a pre-tested and validated questionnaire with Cronbach's-Alpha: 0.783. It involved demographic data, knowledge, attitudes, and practice of statins utilization. The survey guided by the 2013 ACC/AHA dyslipidaemia therapy guidelines. IBM-SPSS V23.0 did data management. Females represented 114 (57%) with age (30.2 ± 5.9) years and males were 86 (43%) with age (31.1 ± 6.2) years (P-value: 0.288). The mean of females' experience was (5.1 ± 6.2) years and males (5.6 ± 5) years (P-value: 0.544). Only (17.5%) of females and (24.4%) of males have postgraduate qualifications (P-value: 0.234). The knowledge of females and males about statins was (74.6 ± 15.6%), and (75.1% ± 14%) respectively, (P-value: 0.795). Females and males correctly answered the practice questions with (55.8 ± 16.4%), and (56.3 ± 16.2%), (P-value: 0.834). Most of the females (60.5%) and males (59.3%) have a positive attitude about statins therapy for patients with type 2 diabetes. Only (20.2%) of females and (20.9%) of males have a neutral attitude. However, (19.3%), and (19.8%) of females and males have a negative attitude toward statin treatment (P-value: 0.871). There is a statistically non-significant difference between females and males who had an equivalent level of experience and postgraduate education in knowledge, attitude, and practice. Females and males have a significant level of awareness and positive attitude about statins utilization among individuals with type 2 diabetes.

Keywords: Awareness, gender, KAP, statin, type 2 diabetes

COMPARISON OF CLINICAL AND HOSPITAL PHARMACISTS' AWARENESS OF STATINS USAGE IN DIABETIC DYSLIPIDEMIA MANAGEMENT: A CROSS-SECTIONAL STUDY

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Abstract

The 2013 American College of Cardiology/American Heart Association (ACC/AHA), cholesterol management guidelines, stressed global cardiovascular (CV) risk reduction as opposed to targeting low-density lipoprotein-cholesterol (LDL-C) levels, emphasized the use of statins lowered the risk of CV diseases. The study intended to compare the knowledge, attitude, and practice of clinical and hospital pharmacists towards statins utilization in diabetic dyslipidemia management (DDM). A cross-sectional study was conducted at Pulau Pinang Hospital, in January – July 2017, Penang, Malaysia. About 43 pharmacists were enrolled using a pre-tested and validated questionnaire with good reliability (Cronbach's-Alpha: 0.783). It includes demographic data, knowledge, attitudes, and practice of statins use. The survey based on the 2013 ACC/AHA dyslipidemia therapy guidelines. Data were analysed using IBM-SPSS version 23.0. Clinical pharmacists (CPHs) represented 51.2% with age (31.4 ± 5.9) years, and hospital pharmacists (HPHs) were 48.8% with age (26.6 ± 3.3) years ($p= 0.020$). The mean duration of working experience for CPHs and HPHs was 6.3 ± 4.1 years and 2.8 ± 2.5 years, respectively ($p= 0.138$). Only (22.3%) of CPHs and (4.8%) of HPHs have postgraduate qualifications ($p= 0.001$). The knowledge of CPHs and HPHs about statins was ($80.5 \pm 12.1\%$), and ($69\% \pm 6.2\%$) respectively, ($p= 0.038$). CPHs and HPHs correctly answered the practice questions with ($65 \pm 20.4\%$), and ($44.8 \pm 8.7\%$), $p < 0.001$). Most of the CPHs (59.1%) and HPHs (57.1%) have a positive attitude about statins therapy in DDM. About (22.7%) of CPHs and (33.3%) of HPHs have a neutral attitude. However, (18.2%), and (9.5%) of CPHs and HPHs have a negative attitude toward statin treatment ($p= 0.997$). There is a statistically significant variance between CPHs and HPHs in knowledge, and practice. CPHs have a higher level of knowledge, and practice about statins use in DDM than HPHs. However, there is a statistically non-significant difference in their attitude.

Keywords: Awareness, gender, KAP, statin, type 2 diabetes.

INFORMATION SUPPORT TOOL FOR MALAYSIAN BREAST CANCER PATIENTS ON CHEMOTHERAPY

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Abstract

Breast cancer is the most common cancer among women in Malaysia. Chemotherapy is one of the main treatments for breast cancer, however, misconceptions on chemotherapy continue to persist. As such, development of an information support tool on chemotherapy for breast cancer patients in Malaysia would be of paramount importance. The aim of this study was to develop and validate an information support tool in the form of booklet and web-based in Malay and English for breast cancer patients on chemotherapy. This involved conducting extensive literature review, development of first draft, content validation by experts in the field, pilot testing and finalisation of the revised tool. Findings from a qualitative study conducted on breast cancer patients who have completed their chemotherapy were also incorporated into the tool. The tool entitled *Chemotherapy for Breast Cancer* included topics on statistics of breast cancer in Malaysia, risk factors, treatment modalities, chemotherapy regimens, side effects of chemotherapy, patients' experiences on chemotherapy, hormonal therapy as well as the use of complementary and alternative medicine. Pilot testing of the tool on 22 patients with breast cancer receiving chemotherapy found that the majority of the patients (n=21, 95.4%) agreed that the tool was easy to follow and the tool increased their knowledge on chemotherapy for breast cancer (n=19, 86.4%). They would also recommend the tool to other women with breast cancer on chemotherapy or considering chemotherapy (n=21, 95.5%). The tool will be a useful and reliable source of information for breast cancer patients undergoing chemotherapy and can be utilised by healthcare practitioners during treatment consultations.

Keywords : Breast cancer, chemotherapy, information support tool

FRAILTY SYNDROME IN COMMUNITY-DWELLING OLDER PEOPLE**MOHD YADZLAN YAHYA, MARHANIS SALIH AH OMAR***

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Abstract

Frail elderly constitutes most consumers within the health care system as they tend to experience progressive physiological changes due to the aging process. Frailty may cause severe adverse health outcomes at which of getting elevated risk of falls, less mobility, hospitalization, less independent, disabilities and even may lead to fatal. This study was aimed to investigate the behaviour of older people confronting the frailty syndrome. A cross-sectional study was conducted among community dwelling older adults in Kuala Lumpur started from May 2017 until November 2017. The FRAIL questionnaire was used to collect detailed information on a frailty scale. Chi-square test was used to compare population characteristics across FRAIL scale status. In this study, 244 community-dwelling older people with frailty syndrome were recruited. They were further categorized into frail (39%, n= 96) and pre-frail (61%, n= 148). The level of fear of falling among the respondents is low with mean score of 40.77 (SD 28.65). Despite the frailty syndrome, the majority of the respondents opted to not to talk to their family and friends (84%, n= 204) or even their health care providers (89%, n= 218) regarding the syndrome or preventive measures. The term frailty syndrome was much related with the older adults and high falling risk and falling will further affect their quality of life.

Keywords :elderly, bone, fall

TRADITIONAL COMPLEMENTARY MEDICINE USE AMONG PATIENTS WITH CHRONIC KIDNEY DISEASE

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Abstract

Chronic kidney disease (CKD) is a worldwide problem that reduces quality of life and increases mortality. In recent years, the use of traditional and complementary medicine (TCM) have become more popular among the population including renal patients. However, patients with CKD are more vulnerable to TCM use. It is understood that approximately 50% of CKD patients take TCM with the most common being herbs. The risk of taking oral TCM is the unknown compounds in the herbal mixture. The current work aims to identify the use of TCM and effects in CKD patients in Malaysia. The study was performed in a teaching hospital in Malaysia. Patients aged ≥ 18 years and diagnosed with CKD were included in the study. Those that refused to be interviewed were excluded. A total of 160 CKD patients were included. It was found that 26% (n=42) of the patients admitted to taking TCM. There were 35 types of oral TCM and 42 types of non-oral TCM. Among the common TCM used were oral herbs, herbal juice, Arabic gum, tumeric, coriander, Java tea and massages. It was demonstrated that there was higher level of electrolyte imbalance in patients taking herbal versus (n=19) herbal+non-oral (n=16) and non-oral medicine (n=7) ($\chi=9.9$, $p=0.01$) on admission. In conclusion, the use of TCM in renal patients should be further investigated in the local population due its popular use.

Keywords :renal, traditional, complementary, medicine, herbal

ACTION RESEARCH IN COMMUNITY PHARMACY: DEVELOPMENT OF MEDICATION REVIEW MODULE

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Abstract

The prevalence of diabetes mellitus in Malaysia is increasing and despite availability of effective therapies, patients still achieve sub-optimal clinical outcomes. Pharmacists have roles in supporting patients in their diabetes management. Medication review by community pharmacist is an opportunity for patients to receive advice and counselling on medication. It is an individualized meeting between a patient and pharmacist, aiming to review the patient's medication in order to ensure the safe and quality use of medication. Therefore, the objective of this study is to develop a Community Pharmacy Medication Review (CPMR) module for Malaysian community pharmacy. Action research methodology will be employed. Action research gives the flexibility to the researcher to be an observer, service provider and a researcher at the same time. Action research is a cycle whereby continuous modification of the medication review model will occur based on the challenges, barriers and the feasibility of providing such service in the community pharmacy setting. Action research is an approach to perform research which is based on a problem-solving relationship between researchers and clients, which aims at both solving a problem and at collaboratively generating new knowledge. Even though it is widely used in other disciplines, but limited researches have been carried out in pharmacy practice. This method is chosen as it is expected that several cycles will be required in this study in order to get to the best practice. In general, action research method involves the review of current practice, identify an aspect that needs improvement, imagine a way forward, try it out, take stock of what happens, modify the plan in the light based on findings, and continue to monitor and evaluate the modified action and continue until satisfaction is seen. Suitable models of medication use review will also be sought from the literature as well. Researcher, academician, community pharmacist and other stakeholders will be involved in providing their views and comments to enhance the proposed CPMR module.

Keywords :Action research, pharmacy practice, medication review, primary health care

ATTITUDE OF COMMUNITY PHARMACISTS TOWARD THE SALES OF HEALTH SUPPLEMENTS

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Abstract

The usage of health supplements has been increased because of their affordability and accessibility in the market besides allopathic medicines. This trend has led to increasing demand by the public to purchase health supplements in the community pharmacy. Nonetheless, little is known about the views towards the sale of health supplements among community pharmacists. Therefore, the purpose of this study was to assess the attitude of community pharmacists towards the sales of health supplements. A cross-sectional survey was conducted at the community pharmacies in Selangor. By using a convenience sampling method, a set of self-administered questionnaires was developed and distributed to the community pharmacists to collect pharmacists', their customer backgrounds and their attitude towards the sale of health supplements. A total of 85 pharmacists have participated (51%), with the majority of them were female (80%) and aged 20-29 years old (65.9%). More than two-third of respondents (69.9%) managed to generate more than RM300 of health supplements' sale per month. Most pharmacists acknowledged the importance of profit generated from selling health supplements (74.1%). They admitted that the presence of consistent demand from the middle-age group of customers generated a high profit from the sale of health supplements (87%). In addition, most of their customers preferred consuming non-medicinal supplements than medicines (66.3%), probably due to the perceived better safety profile of health supplements. There was a significant association between attitudes of female community pharmacists that they agreed by selling the health supplements product could create business competition among the community pharmacies ($p < 0.05$). Even though by selling health supplements could be one of factors approaches to sustain the business of community pharmacies, proper counselling on selection and information of each product should be prioritized in order to ensure proper use, safety and efficacy of health supplements among the community.

Keywords : attitude, community pharmacists, health supplements, sale

KNOWLEDGE, ATTITUDE, AND PRACTICE ON CUPPING THERAPY AMONG STUDENTS OF UiTM PUNCAK ALAM CAMPUS

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Abstract

Cupping therapy is an ancient form of complementary and alternative medicine. It has gained popularity among Malaysians. A current research suggest that cupping therapy appears to be effective for various diseases or conditions. Since cupping therapy is common in our society, there is a need to assess the level of knowledge, attitude and practice of this therapy especially among students of UiTM Puncak Alam. This study was conducted to determine the knowledge, attitude and practices of cupping therapy among students of Universiti Teknologi Mara (UiTM), Puncak Alam and describe its relation with demographic profile such as gender and ethnic. A set of questionnaires were used to obtain data as well as to evaluate the level of knowledge, attitude and practice. The questionnaires were distributed to the students by using convenience sampling method. The collected data was then analysed by using SPSS 20. The level of knowledge, attitude and practice of UiTM Puncak Alam students was assessed according to gender and ethnic. Majority of the respondents were female (75.86%) and the rest were male (24.14%). For ethnicity, 89.66% of the respondents were Malay and other respondents only contributed about 10.34%. In this study, it was found that the knowledge was dependant on gender ($p=0.009$) but not dependant on ethnic ($p=0.549$). The data on attitude revealed that it was not dependant on both gender ($p=0.988$) and ethnic ($p=0.804$). Practice on cupping therapy among the students was dependant on gender ($p=0.045$). However, the practice was independent on ethnic ($p=0.765$). This study showed that the practice of cupping therapy was uncommon among students of UiTM Puncak Alam. Despite that, their knowledge and attitude towards cupping therapy can be considered as good. Factors such as gender and ethnic influenced the level of knowledge, attitude and practice.

Keywords: cupping therapy, alternative medicine, Malaysian public, knowledge, attitude.

THE CLINICAL EFFECTIVENESS OF LEVOTHYROXINE INTAKE BEFORE BREAKFAST VERSUS AT BEDTIME IN PATIENTS WITH HYPOTHYROIDISM: A PROSPECTIVE INTERVENTIONAL STUDY

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Abstract

Levothyroxine absorption following oral administration is the lowest when taken with food. Several studies have suggested that the administration of levothyroxine at bedtime as an alternate in comparison to the conventional before breakfast dosing. This study aimed to compare the clinical effectiveness of levothyroxine administration, either in the morning or at bedtime and to determine the effect of administration time of levothyroxine on patient's quality of life (QoL). A prospective, interventional study was conducted at the Endocrinology Clinic, Hospital Tuanku Ja'afar, Seremban from May to November 2017. Hypothyroid patients were assigned to either before breakfast or at bedtime regime through convenient sampling. After 12 weeks, serum thyroid hormones were tested and QoL variables were assessed using the 36-Item Short Form Health Survey and compared with baseline. Primary outcome measures were the changes in TSH and T4 levels. Secondary outcome were as following: QoL, serum creatinine, liver function, BMI, heart rate and blood pressure. A total of 35 patients completed the 12 weeks study period and were available for data analysis. The serum TSH and T4 level showed improvement in bedtime regime group compared to morning group, in which the mean TSH level reduced from 2.46 ± 1.34 mIU/L to 1.79 ± 0.99 mIU/L ($p = 0.13$) while the mean T4 level increased from 15.25 ± 2.65 pmol/L to 15.73 ± 3.28 pmol/L ($p = 0.51$). Secondary outcomes such as QoL assessment, blood pressure, heart rate and laboratory results (albumin, ALP and ALT) showed no significant difference between morning and bedtime groups. Our study showed the bedtime administration of levothyroxine is non-inferior in improving serum TSH and T4 in hypothyroid patients in comparison to the morning regime. No marked improvements were found in the QoL variables in both administration times.

Keywords: levothyroxine, T4, TSH, before breakfast, at bedtime.

PHARMACY EDUCATION: PICTOGRAMS' APPS AS A PUBLIC TOOL FOR UNDERSTANDING MEDICINE LEAFLET INFORMATION

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Abstract

Medicine or patient information leaflet (PIL) is a written material insert provided in a medicine package that describes information about the respective drugs. It is one of the most important tools for delivering medical instructions to the patients. Thus, it must be carefully developed in order to increase the understanding of patients towards the medical instructions. In a conventional PIL, health care professionals commonly use technical terminologies and medical jargons that are quite difficult to be understood by a general population. Recent studies found that the aid of pictogram, a visual aid or symbol used to substitute written text, could help to convey information and instructions in the leaflet more effectively. Geographical and language barriers as well as differences in social background are major factors that limit the understanding in PIL. Pictograms are a universal communicator that enables people in different range of age, race, religion, even different countries to communicate with each other in their own mother tongues. This research is intended to evaluate the effectiveness of the newly developed pictograms' apps as a public tool for understanding the medicine leaflets information in pharmaceutical products. Incorporation of the pictograms' apps is hypothetically believed to transmit information in a clear, simple, yet expeditious. With smartphones being the most popular mobile device, developing mobile applications has become a current trend in various areas including pharmaceutical fields. A pictogram-aided apps could help to promote the use of effective medicine leaflet to a wider application. It could also provide a viable option to address the need for better communication and information resources as well as enhance the development of health-related mobile apps with great potential for commercialisation.

ANTIHYPERTENSIVE DRUG UTILIZATION STUDY AT OUTPATIENT CLINIC IN HOSPITAL TENGGU AMPUAN RAHIMAH, KLANG

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Abstract

Hypertension is a leading risk factor for mortality. However, only one third of the diagnosed hypertension patients have controlled hypertension. Non-pharmacological and pharmacological treatments are given to control the hypertension. There are several guidelines on management of hypertension. The aim of this study was to determine the type and pattern of antihypertensive drugs used by patients, whether they are in line with the guidelines in management of hypertension and to determine the association between demographic data of the patients with the antihypertensive therapy received. This study was a retrospective cohort study. The study setting was at outpatient clinic of Hospital Tengku Ampuan Rahimah. 1000 prescriptions from January, March and June 2014 were included in this study. The study revealed that there were slightly more female patients (51.7%) than male patients (48.3%). Patients with age groups of 61 to 70 years old were the highest (27.5%). They were more patients of non-geriatrics (66.6%) than geriatrics (33.4%). Malays (37.1%) lead with the highest percentage followed by Indians (29.2%), Chinese (28.0%) and others (5.7%). For hypertension patients with comorbidities, the highest was diabetes (33.1%) followed by hyperlipidemia (29.8%) and ischemic heart disease (8.2%). The commonly prescribed therapy was combination therapy (62.4%) compared to monotherapy (37.6%). The commonly used drugs were first line antihypertensive drugs (87.9%) and 2 combinations of drugs (38.9%). The highly prescribed antihypertensive drugs were Calcium channel blockers (59.2%), Beta blockers (46.8%), ACE inhibitors (39.7%), diuretics (24.5%) and Angiotensin receptor blockers (12.9%). In conclusion, the type and pattern of antihypertensive drugs used at the outpatient clinic of Hospital Tengku Ampuan Rahimah were accordance to the hypertension management guidelines. The antihypertensive drugs therapy and doses that were being prescribed were also in line with the hypertension guidelines and the choice was influenced by comorbidities in patients.

Keywords: Hypertension, Antihypertensive drugs, Prescribing pattern

**A CROSS-SECTIONAL STUDY ON PHARMACY STUDENT'S TENDENCY TOWARD ENTREPRENEURSHIP
AFTER GRADUATION IN UiTM MALAYSIA****FATHIN AZUREN BINTI MOHAMMAD ROSDI¹, AHMAD FAUZI BIN DALI²**¹ Department of Pharmacy Practice, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia

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Abstract

Entrepreneurship involving willingness to take risk, develop, organize and manage a business venture, idea, or good or service. An entrepreneurial spirit can be thought to include elements such as creativity, uniqueness, developing potential and business savvy. With all these skills, future pharmacist can equip themselves so that they can be self-employed and market-ready after graduation. The study aimed to assess pharmacy students' tendency toward becoming entrepreneurs within their chosen pharmacy work environments and to determine the association between socio-demographic factors with students' tendency towards becoming entrepreneurs. A descriptive, cross-sectional design was used to survey a simple random sample of fourth year BPharm students in UiTM Puncak Alam Campus. A 33-item questionnaire with 2 sections was administered. Section 1 was demographic backgrounds and section 2 was Pharmacy Student Entrepreneurial Orientation Scale (PSEO). For section 2, it consisted of 3 factors and 23-item summated scale. Factor 1 are proactiveness (3 items), work ethic (4 items) and empathic supersalesperson (4 items). Factor 2 focuses on student's innovativeness (5 items) and have workplace autonomy (4 items). Factor 3 was about the extent in which students willing to take the risk or just be a followers (3 items). The response rate was 100%. The resulting 3-factor, 23-item Pharmacy Student Entrepreneurial Orientation (PSEO) summated scale was shown to be reliable (Cronbach alpha = 0.913) and normally distributed. Higher mean PSEO scores were found for students who choosing industry and retail-independent as their first choice. Higher mean PSEO score indicated higher tendency towards entrepreneurship. There was no association between any socio-demographic factors with students' tendency towards becoming entrepreneurs. University should play its role in motivating the students by providing the necessary training and courses to instill more positive attitude of the students towards entrepreneurship.

Keywords :Pharmacy student, entrepreneurship, graduation, workplace

KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANTIBIOTIC USE AND ITS RESISTANCE AMONG STUDENTS IN UITM PUNCAK ALAM

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Abstract

Antibiotics is one of the most frequently prescribed drug by the doctors, but often been misused. The misuse of antibiotics is the key element for the increasing of antibiotic resistance. Many approaches have been suggested to overcome the problem of misuse of antibiotics that can lead to antibiotic resistance. For this to be a success, an assessment need to be made for the target group in their knowledge, attitudes and practices (KAP) to ensure that the selected approaches are suitable and have effective outcomes. This study was conducted to determine level of knowledge, attitude, and practice towards antibiotics use and its resistance among students in UiTM Puncak Alam, Selangor and their association to demographic characteristics. This study was conducted among students by convenience sampling. Self-administered questionnaire consists of five sections; demographic characteristics, knowledge towards antibiotics use and resistance, attitude and practice towards antibiotic use were distributed. Result were analyzed by using Statistical Package for Social Sciences (SPSS) version 24.0. A total of 365 respondents were obtained which majority of them were female (82.7%), from Faculty of Pharmacy (38.1%), third year students (39.2%) and have experience taking antibiotics at least once in their lifetime (91.5%) and do not have any family background related to healthcare (57.3%). Overall, most of students (41.6%) have good knowledge regarding antibiotics use and resistance, exhibit positive attitude (55.3%) and demonstrate good practice (71.0%) towards antibiotics use. Besides, there is statistically significant reported between demographic characteristics item with level of knowledge, attitude and practice. In addition to that, there is a moderate positive association between level of knowledge and level of attitude and practice. Stakeholders can use this information to construct better educational plan regarding antibiotics use and its resistance to tackle the interest of students to be more aware with antibiotics resistance issues.

Keywords : antibiotics use, resistance, student, KAP survey

ASSESSMENT OF METHODOLOGICAL QUALITY OF COST-EFFECTIVENESS ANALYSIS OF ADJUVANT TRASTUZUMAB FOR EARLY BREAST CANCER IN ASIA

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Abstract

Adjuvant trastuzumab was shown to be significantly improved disease-free survival among women with over-expresses Human Epidermal growth factor Receptor 2 (HER2)-positive breast cancer. Since then, a few cost-effectiveness analyses (CEA) of adjuvant trastuzumab for early breast cancer in the Asian setting were published. However, the methodological quality of these economic evaluations remains unknown. Therefore, this study aimed to evaluate the methodological quality of the CEA of adjuvant trastuzumab for early breast cancer conducted in the Asian countries. 57-item Philips and 10-item Drummond checklists were used to assess the methodological quality of these CEA by two independent reviewers. The Drummond checklist consists of general criteria that assessing the study structure, consequences, analysis and finally presentation and discussion of the economic study. The Philips checklist focused more on modelling methods and was divided into 3 main criteria: structure, data and consistency. Disagreement between reviewers were resolved by consensus. Data were then analysed descriptively. A total of six studies were included. All studies fulfilled more than half of the requirements in Drummond and Philips checklist. All studies were presented with a well-defined research question, comprehensive description of alternatives, all relevant cost and consequences were included and, adjusted for present value, and sensitivity analysis was performed to define the uncertainty. All studies fulfilled 50% of the components in structure and data as stated in Phillip checklist, while the internal and external consistency were not justified by most of the economic studies. All CEA were generally well conducted. Future studies should incorporate the evidence for consistency measurement as it was one of the important factors in determining the quality of the model.

Keywords : Adjuvant trastuzumab, Asian Countries, Early breast cancer.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE: KNOWLEDGE AND AWARENESS AMONG PUBLIC IN RURAL AREAS OF BAGAN SERAI, PERAK.

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Abstract

Chronic Obstructive Pulmonary Disease (COPD) is a respiratory disorder that mainly caused by smoking. It is commonly associated with substantial morbidity and high mortality across the world and specifically, in Malaysia. The lack of knowledge and awareness on the dangers of COPD caused by smoking among Malaysian can lead to an increasing prevalence of respiratory disease including COPD. The assessment of the awareness and knowledge on COPD is important as it will give some information to the health authorities to conduct any intervention program regarding COPD. The knowledge level and awareness on COPD among people in rural areas, however, is still unknown. The aim of the present study was to assess the knowledge and awareness on COPD among people in rural areas of Bagan Serai, Perak. A three-section questionnaire that assessed on the level of awareness and knowledge was administered to people at three villages at Bagan Serai, Perak. The collected data were then analysed using SPSS Version 20. A total of 305 respondents participated in this study. This study concluded that 67.5% (n =206) of the respondents achieved a moderate level of knowledge while respondents with low knowledge approximately 6.2% (n =19). There was no relationship between gender and knowledge; age group and awareness level and smoking status and COPD knowledge level. However, according to this study, there was a relationship between smoking status and awareness level (p = 0.004). It is suggested that the similar study should be conducted in other rural areas to provide more relevant data with regards to prevention and management of COPD. Furthermore, the extensive COPD educational campaign should be provided to general population especially to the residents of rural areas.

Keywords :Chronic Obstructive Pulmonary Disease (COPD); knowledge; awareness; rural areas

A COMPARATIVE STUDY OF ATTENTION AND MENTAL ALERTNESS LEVEL BETWEEN COFFEE AND GREEN TEA USERS IN KPJ HEALTHCARE UNIVERSITY COLLEGE

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Abstract

College students in today's society have become dependent on coffee due to the presence of caffeine for their daily activities. This paper focuses on the effect of two beverages which are green tea and coffee that have different phytochemical ingredients that responsible for attention and mental alertness. The aim of this research was to compare the attention and mental alertness level between coffee and green tea consumption among students of KPJ Healthcare University College on human biological and psychological functioning of the students. The study was conducted by using a pre-post-test study design, in which forty-five (45) subjects were recruited upon obtaining their consent. The study was then carried out in two sessions, in which green tea and coffee was supplied to the participants once per week, following a seven days of wash-out period. The attention and mental alertness of each subject was measured by the differences of measurement during pre-sampling and post-sampling upon consumption, in the context of blood pressure, heart rate, human benchmark tests, average aptitude test, Toronto Hospital Alertness Test (THAT) and ZOGIM-A questionnaires (i.e. at baseline). Data was analysed using using IBM SPSS Software Version 20. From this study, it was found that coffee and green tea both have significant improvement in the test subject and it can be observed by way of testing their alertness before and after consumption. Both beverages showed a positive outcome in attention and mental alertness within 30 minutes following the intake in term of increase systolic blood pressure, shorter reaction time tests and responds through Toronto Alertness Hospital Test (THAT). Overall, the findings raise the possibility that coffee and green tea when taken alone may have a role in altering physiological and cognitive performance be it in a positive or negative manner.

Keywords :comparison, coffee, green tea, attention, alertness

KNOWLEDGE AND PRACTICE OF UNDERGRADUATE ALLIED HEALTH SCIENCE STUDENTS AT KPJUC TOWARDS IMMUNIZATION

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Abstract

Some parents in Malaysia are refusing to vaccinate their children and it is a great health concern. Immunity is defined as a person's resistance towards a disease after administration of a vaccine. Furthermore, immunization is a preventive health strategy for diseases aimed at improving mortality, morbidity and reducing disease burden. This study's main objective was to assess the knowledge and practice of immunization among undergraduates of allied health sciences in KPJ Healthcare University College Nilai, Malaysia. A survey was conducted from December 2016 to July 2017 using a validated 20-item questionnaire in both Malay and English languages. A total of 112 students from Schools of Physiotherapy, Medical Imaging, Nursing and Pharmacy self-administered and completed the survey questions. Most of the respondents were females 92% (n=103). Demographic information, knowledge and practice scores were summarized using descriptive statistics. The results showed that the students obtained a score of 75.9% (good) on knowledge while the score for practice was 65.2% (fair). The demographical factors of living area, course of study and year of study showed that there were significant relationship (<0.05) to knowledge and practice of immunization. These findings showed that the allied health science students are still lacking in knowledge and practice on immunization, and need to be included in their course content.

Keywords : Immunization, Immunity, Students, Knowledge, Practice.

SYSTEMATIC TRANSLATION AND CULTURAL ADAPTATION PROCESSES FOR MALAYSIAN VERSION OF BRISTOL COPD KNOWLEDGE QUESTIONNAIRE (M-BCKQ)

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Abstract

The Bristol COPD Knowledge Questionnaire (BCKQ) was developed to measure knowledge of chronic obstructive pulmonary disease (COPD) among COPD patients. BCKQ possessed a total of 65 items covering 13 topics namely epidemiology and physiology, aetiology, common symptoms, breathlessness, phlegm, chest infections, exercise, smoking, immunisation, inhaled bronchodilators, antibiotics, oral steroids and inhaled steroids. To the best knowledge, this study of translating English to Malay version of BCKQ was first to be done and published from Malaysia. The aim of this study was to describe the systematic processes for translating the questionnaire from English to *Bahasa Malaysia*. Permission was obtained from the corresponding author. English version of BCKQ (E-BCKQ) was translated into *Bahasa Malaysia* according to the widely recommended international standard translational guidelines. The processes began with forward translation (2 independent translators), reconciliation, back translation (2 independent translators), back translation review, cognitive debriefing, harmonisation, testing of translated questionnaire, proofreading and finalisation. Four independent Malay translators that fluent in English and *Bahasa Malaysia* were involved in the process. A team consisted of senior healthcare professionals and researchers had assisted in reviewing the new translated questionnaire. Majority of the M-BCKQ items were experiencing, conceptually and semantically equivalence between original English and translated Malay. However, during pilot study, there were few words or terms that need further explanation to be given to the respondents including *berdehit, tiub bronkial, dehidrasi, bronkodilator, eksaserbasi, terapi gentian nikotin, vaksin influenza, vaksin pneumokokal, spacer* and *kerintangan bakteria*. Those words or terms were agreed by the Translation Committee to be used in this questionnaire in view to the nature of this study which was mainly focusing on knowledge of COPD. Assistance by researcher in completing the questionnaire can improve respondents' understanding and uniformity of the answer. The systematic translation processes were able to reduce the linguistic discrepancies between the English language and *Bahasa Malaysia* in order to promote equivalence and culturally adapted M-BCKQ.

Keywords: Bristol COPD Knowledge Questionnaire, Chronic Obstructive Pulmonary Disease

HYPERKALAEMIA MANAGEMENT AMONG HOSPITALISED PATIENTS IN HOSPITAL PUTRAJAYA

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Abstract

Hyperkalemia represents one of the most important acute electrolyte abnormalities. It is of major concern due to its potential for causing life-threatening arrhythmias. Although hyperkalemia is easily diagnosed, awareness is required after treatment to guarantee that a recurrence will be instantly perceived and treated. This prospective cross-sectional study was designed to evaluate the current management of hyperkalemia among hospitalised patients. This study conveniently sampled 40 patients who were admitted to general medical ward at Hospital Putrajaya between July and August 2016 and had experienced at least one episode of hyperkalemia. Data was retrieved from online medical records of Hospital Putrajaya. Hyperkalemia episodes were observed in patients with a mean age of 57.75 (\pm 2.39) years old. The majority of patients were Malay (70.0%), male (62.5%) and the hyperkalemia episodes were mostly mild in nature (62.5%). The risk factors independently associated with mild hyperkalemia was in patients prescribed with nonsteroidal anti-inflammatory drugs ($p = 0.027$, OR = 15.608, 95% CI: 1.365 - 78.43) and potassium supplement ($p = 0.038$, OR= 7.227, 95% CI: 1.110 - 47.008) respectively. The majority of hyperkalemia episodes were managed with combination therapy of lytic cocktail and sodium polystyrene sulfonate. The types of hyperkalemia management was found to be statistically significantly associated with the severity of hyperkalemia ($p = 0.0302$). Most of the hyperkalemia episodes among the studied patients were managed in accordance to recommendations by Sarawak handbook of Medical Emergencies, 2011 (Malaysia) (95.0%). The mean length of hospital stay was shorter in mild episodes (6.88 days), when compared to moderate episodes (7.10 days) and severe episodes (7.80 days). Although adherence to treatment protocol by local guidelines was high, the current protocol only describes briefly on acute management in patients. There is a need to produce more comprehensive guidelines on management of hyperkalemia. Further education sessions are necessary to increase healthcare professionals' awareness on optimal management of hyperkalemia.

Keywords: hyperkalemia, management, hospitalised, patients.

MEDICATION NON-ADHERENCE AMONG RURAL POPULATION OF MALAYSIA**NAGESWARI NATCHIMUTHU, MOHAMED MANSOR MANAN, HAZIAN MOHD NOR**¹School of Pharmacy, KPJ Healthcare University College, Lot PT 17010 Kota Seriemas, 71800 Nilai, Negeri Sembilan, Malaysia.
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Abstract

Non-adherence is a non-persistence which means that patients take the decision to stop medications after starting it, without any instruction from a health professional. This issue of non-adherence is closely related to medications for chronic conditions which may lead to treatment failure. This study aim is to determine the magnitude of non-adherence and examine the contributing factors among the rural population. This survey is a questionnaire based study for patients diagnosed with chronic diseases such as diabetes, hypertension, heart diseases, hyperlipidemia and kidney dysfunction. The site is in Kampong Pasoh, Jelebu Negeri Sembilan and the patients were conveniently sampled. The questionnaire is self-administered by the respondents and help is given by the researcher if there is any issue that needs further clarifications. The questionnaire content was on patient demographic, level of adherence and factors contributing to non-adherence. The score on answers on knowledge and perception were calculated in terms of frequency and presented descriptively. A total of 80 respondents consented and completed the survey. 31.3% of them were high adherence, 16.3% medium adherence and 52.5% had low adherence. Factors associated with non-adherence were financial constraints, poor knowledge of medications, missing medication regularly, failure to comply with doctor appointment and lack of awareness about the effect of failing to adhere to instruction. The findings showed that non-adherence is a critical issue for the rural population. Healthcare professionals should realize that more monitoring need to be conducted on this population and to find ways to solve the above issues.

Keywords: Medication, Non-adherence, Rural, Malaysia

A SURVEY OF KNOWLEDGE AND PERCEPTION OF NSAIDS AMONG SELF-MEDICATED CONSUMERS AT A COMMUNITY PHARMACY

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Abstract

The uncontrolled use of NSAIDs can lead to many untoward adverse side-effects such as gastrointestinal bleeding, acute kidney injury and cardiovascular associated complications. Since NSAIDs can be easily available at the community pharmacy, this study objective is to assess the knowledge and perception on NSAIDs self-medication and its use among consumers at a community pharmacy. This survey utilizes a validated questionnaire by Sulaiman et al 2012 and was self-administered by clients of a community pharmacy in Cempaka, Nilai Negeri Sembilan. Selection of participants were by convenient sampling complying to the defined inclusion criteria. The period of study was from April until May 2017. The score for knowledge and perception were calculated in terms of frequency and presented descriptively. A total of 80 respondents completed the questionnaire of which 58.8% (47) were females and 41.2% (33) were males. There were eight types of NSAIDs that were commonly used. The five highest NSAIDs consumed were celebrex (aspirin (12.4%), ibuprofen (10.8%), naproxen (10.8%) and aspirin (10%). In terms of knowledge, fifty four participants (67.5%) had moderate knowledge, sixteen (20%) had good knowledge while twenty-one (26.3%) had poor knowledge. From the aspect of perception, fifty (62.5%) had poor perception on NSAIDs use, twenty (26.2%) had moderate and nine (11.3%) had good perception. The significant demographical variables associated with knowledge were ethnicity, education status and the frequency of pharmacy visits for the past two months. However, there was no significant demographical characteristic that is associated with the level of perceptions. The findings showed that most of the respondents were unaware on the proper use of NSAIDs and had moderate knowledge on NSAIDs. Similarly, their poor perception of NSAIDs use can lead to the occurrences of adverse side-effects if not monitored.

Keywords: Self-medicate, NSAIDs, Knowledge, Perception

IMPACT OF SLIDING SCALE INSULIN ON GLUCOSE VARIATION (GV) DYNAMICS IN CRITICALLY ILL PATIENTS: INVESTIGATION OF 24 HOURS BLOOD GLUCOSE PARAMETERS TO MONITOR GV VARIATION

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Abstract

Studies have shown that acute derangement of blood glucose (BG) control leading to increment in glucose variability (GV) in critically ill patients is observed frequently within 24 hours of intensive care unit. Continuous measurement of BG variation in critically ill patients may be important because poor prognosis may directly or indirectly confer a predisposition to complications such as severe infections, polyneuropathy, multiple-organ failure and mortality. This study aimed to assess the monitoring of 24 hours parameters of GV post-sliding scale intravenous insulin (SSI) therapy in diabetes mellitus (DM) and non-diabetes mellitus (NDM) patients in ICU setting. This study was conducted as a retrospective, single-centre cross-sectional study at general ICU of Hospital Selayang between Jan 2014 to August 2016 (32 months). Five tested monitoring parameters for GV were standard deviation (SD), coefficient of variation (CV), glycemic liability index (GLI), mean absolute glucose (MAG) and mean amplitude of glycemic excursions (MAGE), analysed using EasyGV calculation module. Out of 350 patients, only 50 patients (30 DM and 20 NDM) were eligible for this study. Four out of five GV monitoring parameters (CV, GLI, MAG, MAGE) showed statistically significant GV after initiating SSI in NDM patients compared to DM patients ($p < 0.05$). The results were consistent with mean utilization of insulin for NDM ($57.867 \pm (6.664)$) compared to DM patients ($55.400 \pm (5.514)$) supported by higher mean arterial BG for NDM ($10.927 \text{ mmol/L} \pm (0.787)$). Study also found positive correlation upon GV parameter and admission RBS compared to HbA1C. Individualization of BG dynamics in SSI therapy between critically ill NDM and DM is the first step taken by clinicians nationwide but daily use of GV parameters as part of BG monitoring in ICU setting can be explored further for the benefits of patient's outcome.

Keywords: glucose variability, random blood glucose, intensive care unit, diabetic.

AWARENESS ON MENOPAUSE AND HORMONE REPLACEMENT THERAPY AMONG WOMEN IN NILAI, MALAYSIA

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Abstract

The clinical symptoms of menopause such as sleep disturbances, mood swing, hot flashes, and vaginal dryness has led to the use HRT in menopausal woman. HRT and its effectiveness have been extensively studied. This study however aim to examine the knowledge and perception on HRT at a local context by focusing on women at Nilai, Negeri Sembilan. The method of study was a questionnaire driven survey which was validated by Syed Alwi et al 2015. The questionnaire consisted of three parts. Part 1 content is mainly of respondent's demographical characteristics while part 2 and 3 are questions on knowledge and perception. The score on answers on knowledge and perception were calculated in terms of frequency and presented descriptively. The study period was from April until May 2017. A total of 70 respondents completed the questionnaire. Their age range was between 20 to 60 years and twenty-nine (41.4%) of the participants aged more than 40 years old. 60% (42) were Malay, eighteen (25.7%) were Indian and ten (14.3%) were Chinese. The findings showed that 48.6% (34) had moderate knowledge and 65.7% (47) had positive perception towards menopause. In terms of HRT therapy, 75.7% had positive perception and 64.3% had moderate knowledge. Knowledge on the symptoms of menopause were high and they had no worries on the periods and the need of care about contraception. Overall knowledge and perception on HRT were high.

Keywords: Menopause, HRT, Knowledge, Perception

SELF-MEDICATION PRACTICES AMONG ALLIED HEALTH SCIENCE UNDERGRADUATE STUDENTS IN KPJ HEALTHCARE UNIVERSITY COLLEGE

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Abstract

Self-medication practice is common in both developed and developing countries. Allied Health Sciences students in KPJ Healthcare University College (KPJUC) similarly are exposed to self-medication practices in which many have little or no knowledge on the medications they are taking. Based on this reason this study is undertaken to examine the prevalence of self-medication at KPJUC among these students. This was a survey using a validated self-administered questionnaire. The period of study was from March until May 2017. Respondents were selected using the convenient method. Only completely filled questionnaires and respondents that met the inclusion criteria were selected. A total of 93 students were involved in this study. 79 (84.9%) and 14 (15.1%) were female and male respectively. The prevalence of self-medication of KPJUC allied health sciences students were 77.5%. The self-medication practices were not associated with their demographical characteristics such as age, gender, race, program of study and year of study. Analgesics (71.0%) and antihistamine (62.4%) were the two main medications that students self-medicate. The two most conditions for self-medicate were headache (91.4%), cough and common cold (89.2%). Three major reasons to self-medicate were the mild diseases (73.1%), time saved from going to see the doctor (67.7%) and more economical (64.5%). The findings found self-medicate is a common practice among KPJUC students. These practices need to be monitored and education on the appropriate self-medication need to be initiated by the university.

Keywords: Prevalence, self-medication, students

RISK PERCEPTION OF PRESCRIBED DRUGS IN PREGNANCY AMONG MALAYSIAN PRIVATE PRIMARY HEALTHCARE PROFESSIONALS

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Abstract

Apposite risk perception of drugs use in pregnancy by healthcare professionals is vital for pregnant women to receive optimum health outcomes during their prenatal period. The study aimed to determine the perception risk level to prescribed drugs for pregnant mothers after reading ten blinded drug labels, and its attributable parameters among private primary healthcare professionals. In this cross-sectional study, self-administered questionnaires (Rasch model item reliability = 0.95) were disseminated among 56 healthcare professionals working in private clinics and community pharmacies (general practitioners, n = 40; community pharmacists, n = 16), enrolled via purposive sampling in Perlis, Malaysia, between February to March 2017. Selected 10 blinded drug descriptions taken out from product information leaflet of pregnancy section were labelled as drug A, drug B, drug C, drug D, drug E, drug F, drug G, drug H, drug I, and drug J (paracetamol, lamotrigine, isotretinoin, metoclopramide, phenytoin, propranolol, budesonide nasal spray, metformin, cetirizine, and ciprofloxacin, respectively). For each drug, 1 mark given for the correct answer (selection of answers: 'in all circumstances', 'rather yes', 'rather no', 'under no circumstances'), that summed up to 10 marks. Using SPSS version 23, Mann Whitney U, Kruskal Wallis, Chi square and Spearman correlation tests were used to assess the differences, association and correlation between the independent (gender, age, profession, years of experience) and dependents variables respectively. The mean (\pm SD) prescribing risk perception score was 3.84 (\pm 0.75) with majority of respondents (n = 38; 67.9%) possessed intermediate prescribing risk perception level (score: 4 - 6) while none at high level (low level (score \leq 3): n = 18; 32.1%). There was no significant difference, association and correlation between variables reported in this study. Recruited Malaysian private primary healthcare professionals possessed borderline intermediate prescribing risk perception level that is unaffected by selected independent variables.

Keywords : Risk perception, drugs in pregnancy

PREVALENCE OF NON-SMALL CELL LUNG CANCER ON CHEMOTHERAPY IN HOSPITAL KUALA LUMPUR, MALAYSIA: A DESCRIPTIVE STUDY

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Abstract

Lung cancer is a malignant tumor of the lungs, usually in the cells lining air passages. Non-small cell lung cancer (NSCLC) is more frequent (80 % to 85 %) of all lung cancer cases. The present study was undertaken to report the prevalence of NSCLC on chemotherapy in Hospital Kuala Lumpur (HKL), the largest tertiary care public hospital in Malaysia, between January 1, 2009 to 31 December, 2012. A retrospective cohort study using purposive sampling method was carried out from September 2014 to January 2015 involving review of 163 adult NSCLC patients on chemotherapy (≥ 18 years old) at the Department of Oncology and Radiotherapy, HKL, using a self-designed data abstraction form. Data were analysed using SPSS[®] version 21. The overall mean (\pm SD) age of enrolled patients was 56.7 (\pm 10.1) years old. Majority of the patients were male ($n = 112/163$; 68.7 %). In terms of ethnicity, the majority of the patients were Chinese ($n = 78$; 47.9 %) followed by Malay ($n = 76$; 46.6 %). There were 123 patients (75.5 %) had adenocarcinoma (AC) and 40 (24.5 %) had squamous cell carcinoma (SCC). Many patients had stage IV NSCLC ($n = 106$; 65.0 %), were non-smokers ($n = 61$; 37.4 %) and had ECOG Performance Status (PS) score of 2 ($n = 67$; 41.1 %). The epidermal growth factor receptor (EGFR) status was not performed among 70 (43.0 %) patients. Besides lungs ($n = 146$; 89.6%), other metastasised sites of the body were bone ($n = 40$; 24.5 %), brain ($n = 35$; 21.5 %), liver ($n = 25$; 15.3 %) and adrenal ($n = 15$; 9.2 %). The management of NSCLC is challenging with the passage of time due to its increased prevalence and progressive nature of the disease. NSCLC diagnosed at later stage increases the treatment cost and therefore reduces the chances of survival.

Keywords: Non-small cell lung cancer, metastasis, Hospital Kuala Lumpur

EVALUATION OF TOTAL TANNIN CONTENT AND ANTHELMINTIC ACTIVITY OF *IPOMOEA AQUATICA*

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Abstract

Traditional medicines are widely used for the treatment of various diseases of human and animals worldwide. The present study was aimed to determine the total tannin content and to scientifically assess the anthelmintic activity of aerial parts of *Ipomoea aquatica* (family: Convolvulaceae) against earthworms, *Pheretima posthuma*. Water and methanol extracts of *I. aquatica* were obtained by cold maceration method and subjected to preliminary phytoconstituent screening. The total tannin content was determined by Folin-Ciocalteu reagent method. Three concentrations (25 mg/ml, 50 mg/ml and 100mg/ml) of water and methanol extracts of *I. aquatica* were prepared and the time to paralyze and time to death of the worms, *P. posthuma* were observed and compared with the standard drug, Mebendazole (100 mg/ml). The total tannin content present in both the extracts was ranged from 3.025 – 6.184 gm per kg of dried crude drug. High quantity of total tannin content was observed in water extract than methanol extract. Both extracts at a concentration of 100mg/ml exhibited an effective anthelmintic activity that might be due to the presence of tannins in water and methanol extracts. It has been observed that methanol extract elicited a higher anthelmintic activity than water extract. This may be due to the interference of flavonoids that present in methanol extract of *Ipomoea aquatica*. The present study proposes further research to isolate the anthelmintic bioactive compounds and their standardization to develop the novel herbal anthelmintic agent.

Keywords: *Ipomoea aquatica*, *Pheretima posthuma*, anthelmintic activity, tannin content

ANTIHYPERGLYCEMIC ACTIVITY OF *DERRIS ELLIPTICA* IN STREPTOZOCIN INDUCED DIABETIC RATS

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Abstract

Derris elliptica is a medicinal plant from the fabaceae family, a species of leguminous plant locally known as 'akar tuba'. This study aims to investigate the anti-diabetic activity of *Derris elliptica* methanol leaves extract (DEME) on streptozocin (STZ) induced diabetic *Sprague dawley* rats. Acute toxicity studies were assessed by 2g/kg body weight (bwt) in normal rats. The anti-diabetic activities were investigated in STZ (45mg/kg) intraperitoneally induced rats. Diabetic rats were orally administered with standard drug Glibenclamide (10mg/kg bwt), DEME (200mg/kg bwt and 400mg/kg bwt) for 14 days. Blood glucose, body weight, biochemistry parameter and histology of pancreas, liver and kidney were observed. No toxicity or mortality was observed. A significantly increase in body weight ($p < 0.001$) and decrease in hyperglycemic level ($p < 0.001$) with treated groups. After 14 days, serum insulin in treated group of animals showed significant increased ($p < 0.05$). Administration of both DEME doses significantly reduced aspartate aminotransferase ($p < 0.001$), alanine aminotransferase ($p < 0.05$), lactic acid dehydrogenase ($p < 0.05$), total protein ($p < 0.05$), total bilirubin ($p < 0.05$) while high density total cholesterol increased significantly ($p < 0.001$). The histological results of the treated group with DEME showed improvement compared to negative control rats. The results further demonstrated that regeneration and restoration is one of its anti-diabetic mechanisms including normal kidney and liver functions. This may be due to its antihyperglycaemic activity by up-regulation of insulin secretion in STZ induced diabetic rats. Thus, DEME could be a promising therapeutic agent for the management of diabetes mellitus.

Keywords: Antihyperglycemic, *Derris elliptica*, streptozocin

PHYTOCHEMICAL STUDY OF *Centella Asiatica***SUHAIL BIN SALIM¹, NOOR ANILIZAWATIMA BT SULONG¹, HUMERA NAZ^{1*}****¹Department of Pharmacology and Chemistry, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia. Email: humera@salman.uitm.edu.my****Abstract**

Centella asiatica L. is commonly known for its medicinal and nutritional values throughout the world. Numerous studies proved the therapeutic effects of this plant including wound healing, antibacterial, antidiabetic and anti-inflammatory properties. The medicinal values of this plant were mainly attributed to the presence of several triterpenes, namely asiatic acid, madecassic acid, asiaticoside and madecassoside. The concentration of phytochemicals was found higher in the leaves compared to the roots and petioles. The aim of this study was to investigate the secondary metabolites of *C. asiatica*. Fresh plants of *C. asiatica* were extracted with methanol. The methanolic extract was subjected to thin layer and high performance chromatograph to study the phytochemical constituents of this plant.

Keywords : *Centella asiatica*, Apiaceae, triterpenes, TLC, HPLC

SYNTHESIS AND ANTIMICROBIAL EVALUATION OF PRENYLATED INDOLE DERIVATIVE**V.V.S.S. APPALA RAJU^{1*}, GOPAL NATESAN¹, SHERYAR AFZAL², TAN HUI MIN¹**¹ Department of Medicinal Chemistry, Faculty of Pharmacy, MAHSA University, Malaysia. ² Department of Scientific Basis of Therapeutics, Faculty of Pharmacy, MAHSA University, Malaysia. Email: saiappala@mahsa.edu.my**Abstract**

Development and discovery of newly broad spectrum of antimicrobial agents play an essential role in order to overcome the emergence of antimicrobial resistance. Indole ring possess a variety of pharmacological and biological activities such as antimicrobial and anticonvulsant activities. The aim of this study is to synthesise, characterise and evaluate the antimicrobial activity of prenylated indole derivative. Indole derivatives have been synthesised by using acylation method. The prenylated indole derivatives were synthesised by using phosphomolybdic acid coated with silica as an effective catalyst at room temperature or under reflux. Besides, addition of prenyl group into indole derivatives can improve the antimicrobial activity. Synthesised prenylated indole derivative was evaluated for antimicrobial activity by using agar-well diffusion method. The prenylated indole derivative exhibited antimicrobial activity against *Pseudomonas aeruginosa*. It showed significant result at concentration of 2.5 mg/mL, 5.0 mg/mL and 10.0 mg/mL.

Keywords :Indole, prenylation, antimicrobial, phosphomolybdic acid, agar-well diffusion method

PHYTOCHEMICAL INVESTIGATION AND EVALUATION OF ANTIMICROBIAL ACTIVITY OF DIFFERENT EXTRACTS OF *Gardenia Carinata* LEAVES

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Abstract

The plant *Gardenia carinata* belongs to the family Rubiaceae. It is a native plant to Penang and Kedah Malaysia, commonly known as Golden Gardenia or Kedah Gardenia. The plant possesses therapeutic potential which includes anti-HIV, anti-topoisomerase, anti-cancer and cytotoxic. The main objectives of the study are to determine phytochemical composition, MIC breakpoint and antimicrobial activity of three different extract of *Gardenia carinata* against six microorganisms. The test organism used are *Streptococcus sanguines*, *Streptococcus salivarius*, *Streptococcus pneumoniae*, *Salmonella typhi*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. Different concentrations of plant extracts were tested against each type of microorganism by agar diffusion method. The dried leaves were extracted by Soxhlet extraction process using petroleum ether, dichloromethane and methanol. Two-fold serial dilution method was used to determine the MIC. The MIC zone of inhibition showed range from 0.63 to 1.25 mg/mL. The plant extracts have lower MIC against Gram-positive bacteria than Gram-negative bacteria. Methanol extract showed highest zone of inhibition. Extracts of *Gardenia carinata* showed broad spectrum antibacterial activity in comparison with standard Tetracycline. All the extracts of the highest concentration (20 mg/mL) has the highest zone of inhibition while the lowest concentration (5 mg/mL) has the lowest zone of inhibition. The most susceptible bacteria were *Salmonella typhi*, *Streptococcus pneumoniae* and *Klebsiella pneumoniae*. Antibacterial screening with all three organic extracts showed significant ($p < 0.05$) zone of inhibition. The phytochemical analysis revealed the presence of flavonoid, terpenoid, saponin, tannin, C-glycoside, phenol, carbohydrates, protein, oil and fats. The presence of these compounds possibly being responsible for the antimicrobial activity. In conclusion, the leaves extracts of *Gardenia carinata* has potential to be used as an alternative therapeutic agent against certain microorganism in future drug development.

Keywords: *Gardenia carinata*; Soxhlet extraction, antimicrobial activity, minimum inhibitory concentration

AN ANALYSIS OF CONSUMER ACCEPTANCE TO A PEEL-OFF MASK GEL FORMULATION USING SNAIL MUCUS (*Achatina fulica*) AS MOISTURIZER

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Abstract

Nowadays in society, the demand for peel-off mask gel has been increasing since it improves the skin quality. To be highly acknowledged by the market and to increase consumers acceptance, the product has to be innovative and in a good formulation. One remarkable innovation using allantoin in snail mucus (*Achatina fulica*) as the moisturizing agent in peel-off mask gel. Previous studies have been conducted using a factorial design application as a focus, including two best peel-off mask gel formulations with different dosage formulation: F1 (PVA 14,5% and CMC-Na 5,25%) and F2 (PVA 15% and CMC-Na 5%). This study particularly aims to determine consumer acceptance of snail mucus (*Achatina fulica*) moisturizing peel-off mask gel formulation. This research was conducted through a questionnaire which consists of two sections. Section 1 consists of socio-demographic data while section 2 consists of consumers' acceptance of the formulations. The survey was conducted in four groups of panelists in the Faculty of Medicine and Health Sciences; medical students, dentistry students, pharmacy students, and nursing students. Data from the questionnaire scoring will be entered and analyzed using SPSS. If the results of SPSS data analysis shows that the significance level is less than 0.05, there is a significant differences of consumers' acceptance.

Keywords :consumer acceptance, peel-off mask gel, snail mucus

OPTIMIZATION OF PVA AND CMC-Na CONCENTRATION ON SNAIL (*Achatina fulica*) MUCOUS PEEL OFF GEL FORMULATION USING FACTORIAL DESIGN METHOD**DWI ASIH RAMADHANI¹, ISNA AURA DEWAYANTI¹, DESSY RATNASARI¹, INDRA PUTRA TAUFANI^{1*}**¹ School of Pharmacy, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta (UMY), Bantul, Daerah Istimewa Yogyakarta, Indonesia. Email: dwasihramadhani@gmail.com

Abstract

Dry skin is one of the common skin problems to people who are living in tropical climates. Dry skin on the face can be minimized by using a facial moisturizer. The usage of snail (*Achatina fulica*) mucous which contains allantoin compound that has efficacy as a moisturizer can be used as an alternative to overcome dry skin. The objective of this research is to optimize the formulation of snail mucous peel off gel using CMC-Na and PVA to produce the optimal formula and moisture test. This study is an experimental research and involves formula optimization using factorial design method. Based on previous research, the formula of snail mucous peel off gel formulated were F1 (PVA 15%, CMC-Na 6%), F2 (PVA 10%, CMC-Na 3%), F3 (PVA 15%, CMC-Na 3%), and F4 (PVA 10%, CMC-Na 6%). From these, each formula was re-optimized for physical property parameters such as viscosity, drying speed, spreading potency and stickiness. From these physical properties, each contour plot was made based on good physical properties. Then the contour plot was combined into a super imposed plot which will show the optimal area of optimization. The test of moisture activity was conducted using sin detector RoHs Model 5G-5D with SPSS data analysis. If the T-test shows results that are not significantly different from the factorial design method, so this formula can be regarded as an optimal formula for snail mucous peel off gel.

Keywords: Peel off gel, snail mucous, CMC-Na, PVA

SYNTHESIS, CHARACTERISATION AND CYTOTOXICITY STUDY OF POLY(*N*-ISOPROPYLACRYLAMIDE)-BASED PARTICLES FOR TOPICAL DRUG DELIVERY

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Abstract

The potential of dual-responsive poly(*N*-isopropylacrylamide), PNIPAM-based polymers as carriers for topical drug application is investigated. PNIPAM was copolymerised with acrylic acid (AAc) using the surfactant-free emulsion polymerisation technique. The resulting PNIPAM (PN), PNIPAM-co-AAc 5% (PNA5%) and PNIPAM-co-AAc 10% (PNA10%) were characterised for particle size, zeta potential, temperature- pH-sensitivity, phase transition and stability. The chemical structures of the polymers were confirmed through Fourier infrared spectroscopy, and morphologies were studied using transmission electron microscopy (TEM). The particles were loaded with model permanent caffeine using a post-fabrication technique. Loaded particles were subjected to *in vitro* permeation studies across full-thickness rat skin. The cytotoxicity of the polymers was probed on human skin fibroblast (BJ) cells, *in vitro*. The resulting mean hydrodynamic diameters of the polymers ranged from 600 to 1300 nm with polydispersity index values less than 0.3. The zeta potentials of all polymers were in the range of moderate stability. All particles significantly reduced in size in response to the increase in temperature ($p < 0.005$). PNA5% and PNA10% shrunk as the pH value decreased ($p < 0.001$), while the size of PN was not affected by the pH variation ($p = 0.104$). The phase transitions of all polymers were in the range of 33 to 39°C. The TEM images confirmed particles were successfully synthesised as monodisperse spheres. *In vitro* permeation data demonstrated PNA5% had suppressed the release of caffeine ~4 fold when compared to PN; while the PNA5% with external pH regulator citric acid (CA) exhibited further suppression of caffeine release (~7 fold). For the cytotoxicity of the polymers on BJ cells, PN was found to be not cytotoxic. PNA5% was cytotoxic at all incubation times. However, cell viability increased significantly in the presence of caffeine. Further studies must be carried out to elucidate the release and toxicity mechanisms of the particles.

Keywords :Acrylic acid, poly-*N*-isopropylacrylamide, caffeine, temperature-responsive, pH-responsive

ENDURING RESEARCH INTERESTS ON *HIBISCUS SABDARIFFA* L.**ATHIRAH LATIF¹, IBTISAM ABDUL WAHAB¹ AND HANNIS FADZILLAH MOHSIN¹****Department of Pharmacology & Pharmaceutical Chemistry, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia. Email: ibtislam@puncakalam.uitm.edu.my****Abstract**

The study is focused on the phenolic contents in roselle or *Hibiscus sabdariffa*. Local community pharmacy prescribes this herb as nutraceutical, dental and pharmaceutical products. From the literature, the polyphenolic compounds, e.g. quercetin, kaempferol and apigenin are the main chemical components in *H. sabdariffa*. These phenolics reported to have antihypertensive, antigastric ulcer, antioxidant, antimicrobial and antihyperlipidemia activities. In this investigation, literature review, extraction of the calyces of *H. sabdariffa*, the chromatographic profiling and ultraviolet-visible spectrophotometry analyses were included. In the laboratory work, the colours of *H. sabdariffa* extracts were changed when HCl and NaOH were added. The UV spectra of the *H. sabdariffa* in acidic and basic medium were also observed. The compound's retention factor was calculated, based on the TLC spot. It was found that, the value was comparable with the data from the national herbal monograph. It was suggested that the research sample contains delphinidine-3-sambubioside. Special precautions need to be given, due to low stability of the *H. sabdariffa* extracts. More research needs to be performed, in order to provide updates on *H. sabdariffa*. Publication records demonstrated ongoing attention on this medicinal plant, where light and temperature are continually the concerning experimental parameters.

Keywords :Roselle, extraction, spectroscopy

ISOLATION OF GLUCONONITOL FROM THE *VITEX* POUCH**AMIRAH MOHD ALI¹, AISYAH HASYILA JAHIDIN¹, IBTISAM ABDUL WAHAB¹, HANNIS FADZILLAH MOHSIN¹ AND MIZATON HAZIZUL HASAN¹****Department of Pharmacology & Pharmaceutical Chemistry, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia. Email: ibtisam@puncakalam.uitm.edu.my**

Abstract

The unprecedented extraction of the *Vitex* pouch was performed. The compounds from methanolic and chloroform extracts were isolated *via* silica chromatography. The compound of interest was investigated by using Nuclear Magnetic Resonance spectroscopy. The suggested compound from the methanolic extract, until now, is comparable with the previously reported glucononitol. Nonetheless, more information and understanding on the pharmaceutical and chemical analysis of the *Vitex* species were obtained. It is anticipated that incoming research with advanced technology for this natural product could be continuously explored.

Keywords : *Vitex*, chromatography, extraction, spectroscopy

ACALYPHA, ACTINIDIA AND NEPETA SPECIES AS THE ATTRACTANTS AND FOOD ENRICHMENTS FOR CATS

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Abstract

The comprehensive role of catnips of *Acalypha*, *Nepeta* and *Actinidia* species, respectively from the families of Euphorbiaceae, Lamiaceae and Actinidiaceae, was reviewed. A collaborative research with microbiologists, zoologists and veterinary scientists was also established, in order to correlate the plants' phytochemical aspects with their functions to animals. The literatures mentioned that *Nepeta* yielded less response within animals, specifically the felines, as compared to *Actinidia*. While, the *Actinidia*'s stimulus to other petting animals was not generally known. It is reported that catnips have insect repellent activity against mosquitoes due to the presence of nepetalactone. *Acalypha* and *Nepeta* species are also believed to have antimicrobial activity. In addition, previous research found that *Actinidia* species possessed anti-obesity effect and anti-inflammatory characteristic. In a meantime, the chemical information regarding *Acalypha* plant was only recently published to contain dihydroactinidiolide, another cat stimulant. The methodology included the extraction and thin layer chromatography, as well as screening of the crude extracts. Preparative TLC was also utilised to purify the target molecule. The isolated compounds were then subjected to the NMR spectroscopy. Based on the results, it is found that *Nepeta* sample contained saponin and terpene, while the alkaloids were not observed. The *Actinidia* extract consisted of alkaloid, saponin and terpene. However, the phenolics were absent. The NMR spectrum of the isolated moiety showed the presence of mixture of two or more compounds. Matatabilactone was also expected to be one of the metabolites from the *Actinidia* sample. Unfortunately, the target compound which comprised of nepetalactone, could not be detected. On the other hand, it is suggested that a structure for an iridoid precursor for nepetalactone, i.e. 1-isopropyl-2,3-dimethylcyclopentane, could be established. In future research, other analytical techniques such as column chromatography can be performed to obtain better result for separating the constituents. In conclusion, this finding is in parallel with a publication, which brought up the point that, *Acalypha*, *Actinidia* and *Nepeta* are the natural sources worth to be further investigated.

Keywords :Extraction, catnips, spectroscopy

PROCESS OPTIMISATION OF THE SYNTHESIS OF CHITOSAN NANOPARTICLES FOR CAFFEINE DELIVERY

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Abstract

Chitosan nanoparticles have been widely investigated as drug carriers; with the potential to improve bioavailability of drugs in the skin, enhanced efficacy, and the ability to achieve sustained drug release. In this study, we investigated the effects of stirring speed, stirring time and ultra-sonication time on the size, zeta potential and PDI of the resulting caffeine-loaded chitosan nanoparticles. It was found that the particle size of chitosan nanoparticles decreased from 617.43 nm to 411.27 nm as the speed of stirring was increased from 300 rpm to 700 rpm at a constant time of stirring. The PDI and zeta potential were also increased with increasing stirring speed, but the changes were not significant. The stirring time revealed a decrease in the mean particle size from approximately 421.60 to 319.30 nm, when stirring time was increased from 15 to 60 minutes. Finally, a linear decrease in the average particle diameter of chitosan nanoparticles was observed with increasing sonication time. In conclusion, process parameters appeared to exert a significant influence on the mean particle size, zeta potential and size distribution index of caffeine-loaded chitosan nanoparticles. The controlling parameters are identified in this present study in order to produce caffeine-loaded chitosan nanoparticles with optimal characteristics.

Keywords: chitosan, caffeine, nanoparticles, drug delivery

DISSOLUTION IMPROVEMENT OF LOVASTATIN IN ARGININE AS CO-SOLUTE**NUR FARAHANI ZOLKIFLEE¹, MEOR MOHD REDZUAN MEOR MOHD AFFANDI^{1*}, ABU BAKAR ABDUL MAJEED²**¹Department of Pharmaceutics, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia. ²

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Abstract

Lovastatin (LVS), a previously popular drug of choice in primary and secondary hyperlipidemias with raised low-density lipoprotein (LDL) and total cholesterol levels are currently gaining importance in other various applications. For examples, as potential therapeutic agents for treatments of various types of tumours, regulating inflammation, immune response, and coagulation processes. Due to those potentials, studies on aqueous solubility enhancement of LVS has been widely carried out. The study presented here aims to enhance the solubility of LVS by using arginine (ARG) as a co-solute. A phase solubility study was conducted. Among seven concentrations of ARG studied, the highest amount of LVS was found in SD7 (0.8 mol/dm³). Besides, by comparing SD7 with the intrinsic solubility data, the solubility of LVS was enhanced by a maximum of 28-fold. Therefore, the addition of ARG as a co-solute was proven to increase the aqueous solubility of LVS.

Keywords :lovastatin, arginine, solute-solvent interactions, thermodynamics

PREPARATION AND EVALUATION OF ALBENDAZOLE PASTILLES FOR PAEDIATRIC USE**ABDULLAH KHAN^{1*}, KOWSLYA MUTHIAH¹, K. ANANDARAJAGOPAL¹****School of Pharmacy, KPJ Healthcare University College, Persiaran Seriemas, Kota Seriemas, Nilai 71800, Negeri Sembilan, Malaysia. Email: abdullahkhan@kpjuc.edu.my****Abstract**

The main objective of developing a dosage form is to ensure the ease of administration and safe delivery of drugs to achieve desired therapeutic effects. Formulation of dosage forms suitable for paediatrics and geriatric patients remains as one of the major areas of concern for pharmaceutical professionals. Albendazole, is a commonly used anthelmintic drug administered orally in all age groups. Pastilles are believed to ease the administration of drug in paediatric and geriatric patients and improve compliance on the aspect of acceptability and ease of administration. The present study was aimed to formulate and evaluate Albendazole pastilles using gelatin as binder. The pastilles were prepared by melt and mould technique. The formulations were subjected to physicochemical evaluation such as weight variation, thickness, content uniformity, disintegration and *in-vitro* dissolution. The thickness of the optimized formulation was found to be 0.8mm and weight variation was within the limit of average weight $\pm 10\%$. The disintegration time for formulated pastilles increased with the increased amount of gelatin. The lowest disintegration time (50 seconds) was shown by F1 containing 5% gelatin at and the highest disintegration time (80 seconds) was shown by F3 containing 10% of gelatin. Drug content of prepared pastilles was found to be $97 \pm 0.3\%$. The results of the dissolution rate suggest the influence of gelatin concentration on drug release. However, the difference was very small and it may be attributed to increased binding property with the increase in gelatin concentration which is also evident from the disintegration test. Formulation F1 containing 5% gelatin showed 85% drug release within 20 minutes followed by F2 containing 7.5% gelatin and F3 containing 10% gelatin at 25 minutes. From the studies it is concluded that albendazole pastilles will be a better alternative to conventional oral dosage forms. However, large scale production and stability studies are required to produce at commercial scale.

Keywords: Pastilles Albendazole, gelatin, disintegration, dissolution

POST TRANSLATIONAL OF UBIQUITIN CONJUGATING ENZYME, Ube2J1**NUR SABIHA MD HUSSIN^{1*}, EION FLEMING¹****School of Biochemistry and Cell Biology, Bioscience Institute, College Road, Cork, Ireland****Email: nursabihamdhussein@gmail.com****Abstract**

Ubc6e is a protein from the strain *Saccharomyces cerevisiae* which is a homologue of the human ubiquitin-conjugating enzyme, Ube2J1. Ube2J1 involves in the degradation of misfolded proteins in the endoplasmic reticulum (ER) lumen via the ubiquitin-proteasome system. Ube2J1 is phosphorylated at least at one site, in which the previous study has identified S184 is targeted by p38 mitogen-activated protein kinase (MAPK) under cytosolic response. The site S184 also shown to fit with the p38MAPK. Study has shown that there is another novel phosphorylatable site in the Ube2J1 S184A which undergo post-translational modification after a treatment with phorbol 12-myristate 13-acetate (PMA). PMA was known to activate intracellular pathways including protein kinase C (PKC), c-Jun N-terminal kinases (JNK), p38MAPK and components in the Ras signalling pathway. From the result of PMA activation and the effect of expression of phosphorylated Ube2J1 with the mutation at S184A, it is hypothesised that Ras signalling may have played an effect in regulating the Ube2J1 at the novel phosphorylatable site. One residue at S266 in the Ube2J1 has the highest chance to get phosphorylated due to its position in the protein which can fit the consensus motif of the Ras component kinases. In this study, we try to identify whether S266 is the novel site for phosphorylation. The results suggest that there are few possible putative phosphorylatable sites in the Ube2J1. However, the sites have not yet been found to indicate the novel site for phosphorylation.

Keywords: UPR, Ube2J1, Endoplasmic Reticulum associated Degradation (ERAD), Ubc6e (Ube2J1)

USE OF CHITOSAN NANOPARTICLES FOR THE DELIVERY OF HYDROPHILIC WHITENING AGENTS

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Abstract

Purpose. To investigate the use of chitosan nanoparticles (CS-TPP-NPs) as a carrier for arbutin. **Methods.** In this study, arbutin loaded CS-TPP-NPs were prepared via the ionic cross-linking of CS and TPP and were characterised physicochemically (particle size, zeta potential and dispersity index). The effect of various concentrations (0.1, 0.2, 0.4, 0.5, and 0.6% w/v) of arbutin on the entrapment efficiency and loading capacity was also investigated. **Results.** Data obtained clearly identified the use of CS-TPP-NPs as a carrier for the delivery of arbutin. The average size obtained for the nanoparticles ranges from 196-274 nm as the concentration of arbutin was increased. The PDI value for all nanoparticles remained between 0.2-0.3 while the zeta potential was increased from 41.6 to 52.1 mV. The optimum encapsulation efficiency (79.6%) and loading capacity (86%) was found with chitosan nanoparticles containing 0.4% arbutin. **Conclusions.** The present study describes the successful preparation of chitosan nanoparticles with optimal physicochemical characteristics as a carrier system for arbutin, which we anticipate to be able to improve its delivery through the skin, hence improved its efficacy as a whitening agent.

Keywords: chitosan nanoparticles; Arbutin; whitening agent; topical delivery

SELF NANO EMULSIFYING DRUG DELIVERY SYSTEM CONTAINING KARAMUNTING (*Rhodomyrtus tomentosa* (Ait.) Hassk) EXTRACT LEAF AS ANTIDIABETIC THERAPY**NILAM PERMATASARI¹, PURI PARAMITA WULANDARI¹, RISMANADA JULIA PUTRI¹, BAMBANG HERNAWAN NUGROHO., M.SC,APT¹**¹ Faculty of Mathematics and Sciences, Department of Pharmacy, Universitas Islam Indonesia, Yogyakarta, Indonesia.

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Abstract

Indonesia has abundant biodiversity rich in plants developed as medicinal plants. One of the traditional medicinal uses as an antidiabetic is the karamunting leaf. Karamunting leaf contains flavonoid compounds that have antioxidant activity as anti-diabetes. Antioxidants in the leaves karamunting able to bind free radicals that can reduce oxidative stress. Reduced oxidative stress can reduce insulin resistance that prevents the development of dysfunction and prevents pancreatic β cell damage. However, in the flavonoid compound is less soluble in water so that the purpose of research for the development of self-emulsifying drumming formulations of the extract of a caramunting leaf (*Rhodomyrtus tomentosa* (Ait.) Hassk) as antidiabetes which provide the latest modifications to improve the effectiveness at the time of use, so as to improve the bioavailability of active substances in the body. The evaluation methods used for the Self Nano Emulsification Drug Delivery System (SNEDDS) include solubility, organoleptic, particle size, and PI. In the NU Emulsification Drug Delivery System (SNEDDS) dosage formulations use 90 capryol oil, VCO and olive oil. The main results of the best oil screening are capryol 90, tween 20 as surfactant and PEG 400 as cosurfactant. The results obtained in the sample are particle size between 10.7 nm - 11.6 nm, and PI values between 0.158 \bar{D} -0.473 \bar{D} . The results show good chemical physics, good solubility properties in water and good organoleptic as a self-contained Self Nano Emulsifying Drug Delivery System (SNEDDS).

Keyword: karamunting leaf, SNEDDS, antidiabetic

ANDROGRAPHOLIDE-LOADED PLGA FOR TRANSDERMAL DELIVERY: PERMEABILITY ACROSS STRAT-M MEMBRANE IN VITRO

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Abstract

Andrographolide is a major bioactive component of Sambiloto (*Andrographis paniculata* (Burm F.) Ness) which has an anti-inflammatory effect. Andrographolide is a lipophilic compound with log P of $2,632 \pm 0.135$ and has low water solubility. Transdermal drug delivery system with PLGA (poly lactic-co-glycolic acid) polymers and PVA (polyvinyl alcohol) can improve the bioavailability and control the release of andrographolide to achieve the therapeutic effect and also can avoid the bitter taste of andrographolide. The aims of this study was to observe the effect of variation of PVA concentrations to the release profile and permeation characteristic of the PLGA nanopolymer formulation as the carrier of andrographolide through Strat-M membrane, and to determine the kinetics of transport of andrographolide using the WinSAAM software. PLGA nanopolymer formulation has been made using solvent evaporation method with variation of PVA (%b/v) is 1%, 2,5%, 5% and also without the addition of PVA as the comparison. The *in vitro* permeation study was done using Strat-M membrane on a vertical type of Franz diffusion cell with phosphate buffer pH 7.4 as the medium. The concentration of andrographolide in receptor compartment has been determined using High Performance Liquid Chromatography (HPLC) in 224 nm with an isocratic mixture of methanol and water at ratio of 67:33 v/v as the mobile phase. The amount results of drug release with concentration of PVA is 1%; 2,5%; and 5% in 24 hours was $3.34774 \mu\text{g} / \text{cm}^2$, $2.3369 \mu\text{g} / \text{cm}^2$, $0.2306 \mu\text{g} / \text{cm}^2$. Formula without the addition of PVA has no amount of drug release. The predicted results using WinSAAM software (Windows based Simulation Analysis and Modeling) showed that andrographolide has third compartments in drug release. The compartments model indicated the potential of andrographolide which can transported with the rate following on the first order that will be absorbed from the skin surface to the membrane then flow to the bloodstream that carried it into the acceptor so the therapeutic effect can be achieved.

Keywords :andrographolide, polymer nanoparticles, plga, permeation test, strat-m membrane

ANTIFUNGAL ACTIVITY OF SECONDARY METABOLITES FROM ENDOPHYTIC FUNGAL EXTRACTS ISOLATED FROM FIG (*FICUS CARICA* L.) AGAINST *CANDIDA ALBICANS***HANIDA DESTRIANA FATMAWATI^{1*}, PINUS JUMARYATNO¹, ANNISA FITRIA¹**¹ Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Islamic University of Indonesia, Yogyakarta, Indonesia.

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Abstract

The prevalence of candidiasis and antifungal resistance increased tremendously in the recent years. Metabolites from endophytic fungi seem to have the potential as a new source of drug. The *Ficus carica* L. plant has been reported for its antifungal activity. Therefore, it is hypothesised that the endophytic fungi of the roots, stems, fruits, and leaves from this plant may also exhibit antifungal compounds. This research was aimed to determine the antifungal activity of secondary metabolites derived from endophytic fungal extracts isolated from *Ficus carica* L. against *Candida albicans*. Endophytic fungal isolates were cultured in Potato Dextrose Broth, in a shaker incubator at 25-30°C at 60 rpm. The broth that consist of extracellular metabolites from the endophytic fungi was then filtered and extracted using ethyl acetate. A rotary evaporator was used to concentrate the extract. Antifungal activity of the endophytic fungal extracts was tested using MTT assay at 570 nm. The MIC of the endophytic fungal extracts against the pathogen was determined by microdilution method. The results showed that extracts of endophytic fungi isolated from leaves and fruit exhibited antifungal activity against *Candida albicans* with cell death value of $\pm 72.55\%$ and $\pm 52.82\%$ at 500 $\mu\text{g}/\text{ml}$, and MIC value of 500 $\mu\text{g}/\text{ml}$. Endophytic fungi that were isolated from stems and roots however did not produce any antifungal activity. In conclusion, the endophytic fungal isolates from *Ficus carica* L. has the mild antifungal activity against *C. albicans*.

Keywords: *Ficus carica* L., Endophytic fungal, *Candida albicans*, MTT Assay

ANTICANCER ACTIVITY OF SECONDARY METABOLITES FROM ENDOPHYTIC FUNGAL EXTRACTS ISOLATED FROM FIG (*FICUS CARICA* L.) AGAINST MCF-7 HUMAN BREAST CANCER CELLS

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Abstract

Cancer drug resistance and the side effects continues to be a major concern in the recent years and therefore the development of new drugs is essential. Endophytic fungi have emerged as a potential source of new anticancer drugs. This study was therefore conducted to assess the anticancer activity of endophytic fungi extracts isolated from *Ficus carica* L. against MCF-7 breast cancer cells. The endophytic fungal isolates were fermented in Potato Dextrose Broth. The broth was filtered and extracted using ethyl acetate. The metabolites in the extract was analyzed using Thin Layer Chromatography. The breast anticancer activity test was performed against MCF-7 cells using MTT assay. The results showed that endophytic fungal extracts contain different classes of compounds and the most dominant being terpenoid. The MTT assay showed that the A2 endophytic extract was the most potent against MCF-7 cells with an IC₅₀ value of 875.99 ppm. However, based on the IC₅₀ value it can be concluded that endophytic fungi isolates from *Ficus carica* L. did not show significant anticancer activity against MCF-7 cells.

Keywords :Endophytic fungi, *Ficus carica* L., Breast cancer, MCF 7 cell

PREPARATION AND CHARACTERIZATION GOLD NANOPARTICLE OF KARETS CASSAVA (*Manihot glazovii*) LEAF EXTRACT AS ANTIBREAST CANCER WITH BIOSYNTHESIS HIGH ENERGY

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Abstract

Research of nanoparticles has largely focused on biosynthesis using gold. Gold nanoparticles are widely used in medical as DNA labeling, biosensor, cancer therapy, antimicrobial and in drug delivery system. The content of flavonoid in the form of routine contained in Karet cassava leaf's extract (*Manihot glazovii*) has a role as reducing agent and stabilizer in synthesis of gold nanoparticle. This study is aimed to determine the preparation, characterization, and anti-cancer activity of gold nanoparticle of *Karets cassava* leaf extract with high energy biosynthesis. Gold nanoparticles are made by mixing HAuCl₄ with an extract using ultrasonic. Characterization of gold nanoparticles includes observation of its color change, time of gold nanoparticle formation, particle size, morphology and profiles. Observation of color change is done visually. The formation of gold nanoparticles was performed using the UV-Vis spectrophotometer. The particle size was observed using particle size analyzer. The morphology of gold nanoparticles was observed by using SEM and TEM while the profiles of the gold nanoparticles was observed by using Fourier transform infrared (FTIR). The result from this study showed that the best formula using high energy biosynthesis is formula 7 (extract 5% 1000 ul: HAuCl₄ 375 ul). Formula 7 (extract 5% 1000ul: HAuCl₄ 375 ul) revised yellow to pink, has a wavelength of 540 nm, has an average particle size of 65 nm, a PDI value of 0.44 and a morphology of AuNPs which means the triangle, hexagons, and circles, and had anti-cancer activity on the MTT assay test. Conclusion: Gold Nanoparticle of Karet cassava leaf extract (extract 5% 1000ul : HAuCl₄ 375 ul) showed a promising anti breast cancer activity.

Keywords: Gold Nanoparticle, Biosynthesis High Energy, Antibreast Cancer

EVALUATION STABILITY FOR GREEN SYNTHESIS NANOPARTICLE SILVER LEAF BANANA (*Musa sapientum*)

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Abstract

Silver Nanotechnology is a growing nanoparticle technology at the moment in the world. The process of forming through the reduction reaction with the addition of reducing agent from the secondary metabolite of banana leaf that helps the biosynthesis of nanoparticles. However, the reducing concentration and the silver salt may affect the size of the nanoparticles to be less stable to form the particle agglomeration. The addition of Polyvinylalcohol (PVA) as a stabilizer in banana leaf nanoparticles can keep particles in a stable state. The purpose of this research is to know the process of physical stability of silver biosynthesis biochemical nanoparticles (*Musa Sapientum*) after the addition of Polyvinylalcohol (PVA). The silver nanoparticles were synthesized using the chemical method (*Bottom Up*) by mixing the banana leaf extract and AgNO₃ 1mM. After preparation of banana silver nanoparticles, a mixture was added by adding a PVA of 0.5% concentration. Furthermore, it is evaluated by measuring the maximum wavelength of silver nanoparticles using UV-Vis spectrophotometer at 1 hour, 24 hours, 1 week, 2 weeks, 3 weeks, and 4 weeks. Measurement of particle size using Particle Size Analyzer (PSA) to see the stability of the particle size of nanosilver. The last test by observing Moforlogi from nanoparticles with the addition of PVA 0.5%. The result of spectrophotometer test is that the stability of PVA Polyvinylalcoholic addition of the fastest unstable formulation at week 4 is F1 200uL with maximum wavelength 334,60 and result of Particle Size Analyzer (PSA) test at 4th week with dissolved silver nanoparticle most unstable and rapidly agglomerated F1 200uL. The conclusions of UV-Vis spectrophotometer and *Particle Size Analyzer* (PSA) testing were unstable at 4 weeks ie F1.

Keyword : Nanoparticle silver, leaf banana, Polyvinylalkohol (PVA).

PREPARATION AND CHARACTERIZATION NANOPARTICLE BANANA LEAF (*Musa Sapientum*) WITH PROCESS GREEN SYNTHESIS

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Abstract

Chemical methods in nanoparticle preparation are more frequently applied by using chemicals as their reducers. However, the use of chemicals creates very dangerous waste that developed a more environmentally friendly method. Potential banana leaf with polyphenol compound *Epigallocatechin Gallate* (EGCG) can be used as bioreducers. Synthesis is carried out by chemical method to replace the reducing agent of the chemical with EGCG polyphenols. This study aims to examine formulation and characterization of silver nanoparticles with a combination of banana leaves (*Musa sapientum*). Preparation begins with the preparation of 40% banana leaf extract which is then added with AgNO₃ 1 mM. Further identification and characterization using several analytical techniques such as UV-Vis spectrophotometer to determine the absorption of a maximal wave from the nanoparticle. Observation of visual colour changes in the biosynthesis process. Particle size determination with Particle Size Analyzer (PSA), functional group spectrum in *Fourier Transform Infra-Red* Spectrophotometer (FTIR) and *Transmission Electron Microscopy* (TEM) to determine the morphology of the particles. The results of preparation and characterization on the formulation of the 7 nanoparticles of silver banana leaf, showed 414 nm wave absorption with the colour change to yellow after 15 minutes. The PSA measurement yielded 56.7 ± 0.40 nm with a PI of 0.28 ± 0.05 \bar{D} was good enough and the spectral uptake at FTIR involved the -OH group in the synthesis process. The morphological appearance of TEM analysis results in the form of a round crystal. Inferred from this study the banana leaf (*Musa sapientum*) used as a bioreductor can produce silver nanoparticles and be more environmentally friendly.

Keywords: Silver nanoparticles, banana leaf extract (*Musa sapientum*), biosynthesis, *Epigallocatechin Gallate* (EGCG).

MODIFICATION AND CHARACTERIZATION OF GOLD NANOPARTICLES 0.1% RUTIN TRIHYDRATE AND 2.5% PVA AS A STABILIZER WITH BIOSYNTHETIC PROCESS**SETYA DEWI WULANDARI^{1*}, BAMBANG HERNAWAN NUGROHO¹, DITYA AYU NATALIA¹, PUSPITA FITRI HANDAYANI¹, RENY MUFRIKHATUN EL WALIDAYN¹**¹Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, Jl Kaliurang km 14,5 Yogyakarta, +62274898444, Indonesia. Email: 14613112@students.uui.ac.id**Abstract**

The process of biosynthesis of gold nanoparticles is most desirable because it can be used as a sensor, catalyst, easily synthesized and functionalized, biocompatibility (low toxicity), and optical properties are easily regulated. One of the compounds that can be used to help the process is a rutin compound. Rutin has physiological actions such as anti-inflammatory, antibacterial, antioxidant, and antitumor. However, the preparations produced in the previous study were unstable due to rapid aggregation resulting in flocculation in the preparation, therefore, the addition of stabilizers such as PVA were necessary so that aggregation did not occur too quickly and the preparations did not flocculate. This study aims to characterize and improve the stability of gold nanoparticles with the addition of PVA as a stabilizer preparation. The method used in this research is gold nanoparticles made using bioreductions method. Characterization and stability are done by looking at color, wavelength, particle size, PDI, zeta potential, and morphology. The results of this study indicate that gold nanoparticles of rutin trihydrate samples are formed within ± 9 seconds for treatment and ± 5 seconds for control. The wavelength of the entire formula is within the gold nanoparticles range 500 - 550 nm at 24 h. Particle size and PDI of the best formulas (900 μ L HAuCl₄, 1000 μ L rutin trihydrate, and 525 μ L PVA) gold nanoparticles were 116.9 nm and 0.049. The morphology of gold nanoparticles formed are round, triangular, square, hexagonal and hexagonal. The stability of the preparation can be better in terms of wavelength parameters, particle size, PDI, and zeta potential. The conclusion is to add 525 μ L of 2.5% PVA can stabilize the preparation.

Keywords: Rutin Trihydrate, PVA, Gold Nanoparticles, Biosynthesis, Stability

FORMULATION AND CHARACTERIZATION OF PLGA POLYMER NANOPARTICLES EXTRACTED FROM SNAKE FRUIT SKIN (*Salacca zalacca*) USING SOLVENT EVAPORATION METHOD**ARMAN SURYANI^{1*}, NINDY MUTIA PRATIWI¹, EGA ASTIANA NUZUL WAHYUNI¹, YANDI SYUKRI¹, BAMBANG HERNAWAN NUGROHO¹**¹Faculty of Math and Science, Departement of Pharmacy, Universitas Islam Indonesia, Jl Kaliurang km 14, 5Yogyakarta, +62274898444, Indonesia. Email: armansuryani4@gmail.com**Abstract**

Snake fruit skin (*Salacca zalacca*) has been processed by the community as a traditional medicine made in the form of tea that is believed to hereditary community to treat Diabetes. The skin of the fruits contains flavonoids, tannins and alkaloids. However, the use of natural materials has limitations, which is often experienced failure in the clinic phase due to low bioavailability. Polymer-based nanoparticles are often used as effective carriers for drug delivery into cells. One of the polymers commonly used in the manufacture of nanoparticles is polylactic-co-glycolic-acid (PLGA) which is a polymer that can be used as a drug delivery system. The use of nanoparticles (PLGA) is able to enhance the pharmacokinetic profile of bioavailability of a drug derived from natural materials and has good degradation characteristics as well as the possibility of continuous drug delivery. The purpose of this research is to formulate and know the characteristics of Snake fruit skin extract (*Salacca zalacca*) with the base of polylactic-co-glycolic-acid (PLGA) polymer nanoparticles. Preparation of snake fruit skin extract by maceration method, nanoparticle with solvent evaporation method, organoleptic test, globul measurement and potential zeta measurement with Particle Size Analyzer (PSA) stability test and morphological observation of nanoparticles with TEM (Transmission Electron Microscopy). The results of this study resulted particle measurement with Particle Size Analyzer, with the value of $174,9 \pm 3,119$ nm and zeta potential value equal to $-36,4 \pm 1,22$. In the stability test, the characteristics of PLGA nanoparticles with salvage extracts with 250x dilution yielded the best stability with particle size 165.866 ± 2.837 nm, PI 0.289 ± 0.122 and zeta potential -38.866 ± 0.450 . The results obtained from observations using Transmission Electron Microscopy (TEM) showed that the sample has a monodisperse distribution form. The white portion shows the nonpolar compound while the black portion shows the polar compound.

Keywords: Snake fruit skin, polylactic-co-glycolic-acid (PLGA), solvent evaporation

PLGA BASED NANSUS (NANO SUSPENSION) CONTAINING DRAGON FRUIT PEEL EXTRACT FOR BREAST ANTICANCER ACTIVITY**AMANDA OKTA RIFANI^{1*}, PUTRI ARIFA AYU DAMAYANTI¹, YUNI KURNIA SARI¹, LUTFHI CHABIB, S.FARM., M.SC., APT¹**¹Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, Yogyakarta, Indonesia.

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Abstract

One of the technologies being developed is nanoscale technology. Nanotechnology is a technology where drug particles are made on a nanoscale (10 nm - 1000nm). Nanosuspension drug formulations can reduce the risk of toxicity as well as improve the effectiveness, tolerability and therapeutic index of the drug. Dragon fruit peel (*Hylocereus polyrhizus*) is rich in polyphenols and antioxidants, the red dragon fruit peel is greater than its flesh activity. *Poly lactic-co-glycolic acid* (PLGA) based polymers nanosuspension are often used as effective carriers for drug delivery into cells. PLGA nanosuspension are easily recognizable by the body's immune system and then eliminated from the circulatory system. This study aims to formulate the nanosuspension of dragon fruit peel extract as breast anticancer in T47D cancer cells, in which the dragon fruit skin is active, PLGA as drug carrier polymer, PVA as polymer, chitosan as polymer and ethyl acetate as solvent. The solvent evaporation method utilizes high-speed homogenization, followed by solvent evaporation, either by continuous magnetic stirring at room temperature or at low pressure. This method is considered the most suitable to use, the time of manufacture is not long and the method is simple. Characterization of nanosuspension includes organoleptic test, particle size measurement, polydispersity index and zeta potential. The result of characterization on formula yielded particle size $445,4 \pm 12,7$ nm with the index of polydispersity $0,181 \pm 0,07$ and zeta potential $11,36 \pm 0,51$, these results indicate that the particle size and zeta potential obtained are good and the polydispersity index indicates that the resulting formula is stable.

Keywords :Dragon fruit peel, nanosuspension, PLGA

ANDROGRAPHOLIDE PERMEATION STUDY THROUGH STRAT-M MEMBRANE USING OLEIC ACID AND PEG 400 AS THE ENHANCERS

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Abstract

Andrographolide is the main components of Sambiloto (*Andrographis paniculata* (Burm. F.) Ness) which has many properties such as an anti-inflammatory effect. Andrographolide is a lipophilic compound with log P of $2,632 \pm 0,135$, the molecular weight of 350,45 g / mol and has a low bioavailability (2,67%), so it was possible to be administered by transdermal route. Transdermal drug delivery system can improve the effectiveness of a drug. To increase the amount of drug that enters the body is required an agent that can increase the permeability of skin barrier called permeation enhancer. Some of the most commonly used permeation enhancers are oleic acid and PEG 400. This study aims to determine the effect of oleic acid and PEG 400 as enhancers to andrographolide permeation through Strat-M membrane, and to determine the kinetics of transport of andrographolide using the WinSAAM software. This study was conducted by making 6 formulas using the different concentration of permeation enhancers. The ratio of oleic acid and PEG 400 (%w/w) in Formula 1 is 5%:35%, Formula 2 is 10%:30%, Formula 3 is 15%:25%, Formula 4 only uses oleic acid 15%, Formula 5 only uses PEG 400 40% and Formula 6 without the addition of enhancers that has been used as the comparison. Permeation study was performed by Franz diffusion cell with Strat-M membrane for 12 hours. HPLC with UV detector was used to determine the concentration of andrographolide in receptor compartment. The results showed that combination of oleic acid and PEG 400 were able to increase the amount and flux of drug release better compared to single enhancer and formulas without enhancers. The predicted results using WinSAAM software showed that andrographolide has three compartment models with the first order of drug release.

Keywords :andrographolide, oleic acid, PEG 400, enhancer, permeation

DEVELOPEMENT AND *IN-VITRO* EVALUATION OF AMOXICILLIN LOADED HPMC K15M MUCOADHESIVE MICROCAPSULES USING 3²- FULL FACTORIAL DESIGNS FOR SUSTAINED DRUG RELEASE AT THE GASTRIC MUCOSA

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Abstract

Amoxicillin (α -amino-p-hydroxybenzyl-penicillin) is a semisynthetic, orally absorbed and widely prescribed β -lactam antibiotics. It is now widely used for eradication of gastric *H. pylori* infection combined with a second antibiotic and an acid-suppressing agent despite its short elimination half-life of one hour. The purpose of this study was to develop and evaluate amoxicillin loaded HPMC K15M mucoadhesive microcapsules for sustained drug release at the gastric mucosa to prolong residence time of dosage form in stomach and to achieve controlled drug release for more effective *H. pylori* eradication. Amoxicillin mucoadhesive microcapsules were formulated by ion gelation technique using 3² factorial designs. A 3² full factorial design was used to derive statistical equation, ANOVA analysis, contour plots and 3D response surface plots. FT- IR (4000 cm⁻¹- 450 cm⁻¹) of amoxicillin and with polymers was performed by using potassium bromide pellet method; and result was no interaction between the drug and polymers combined. Different polymer ratios of HPMC K15M and sodium alginate were used to formulate nine formulations (F1 to F9) of HPMC K15M loaded mucoadhesive microcapsules of amoxicillin and characterized by determining its percentage of yield, particle size, percentage of entrapment efficiency, swelling index, percentage of mucoadhesion and percentage of drug release. The optimized formulations F9 exhibited a high drug entrapment efficiency of 92.50 \pm 0.04%, particle size of 840.18 \pm 0.02 μ m, percentage yield of 97.50 \pm 0.01%, swelling index of 100.20 \pm 0.02%, percentage mucoadhesion after 8 h was 65 \pm 0.03% and the drug release was sustained for more than 14 h. The kinetics of the drug release of amoxicillin mucoadhesive microcapsules formulation showed good fitting with zero order and Korsmeyer-Peppas model equation followed by a non-Fickian type of release. It was observed that amoxicillin mucoadhesive microcapsules was adhered more strongly to the gastric mucous layer and drug release sustained longer period of time in the gastric mucosa consequences increasing bioavailability, improving patient's compliance and reducing dosing frequency. Amoxicillin mucoadhesive microcapsules can be effectively used for sustained drug release to the gastric mucosa in treatment of *H. pylori* infection.

Keywords: *Helicobacter pylori*, Amoxicillin, sodium alginate, mucoadhesive drug delivery, Factorial designs, ion gelation technique

FORMULATION AND EVALUATION OF METRONIDAZOLE LOADED CARBOPOL 934P MUCOADHESIVE MICROCAPSULES USING 3² FACTORIAL DESIGNS FOR THE TREATMENT OF *H. Pylori* INFECTION

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Abstract

Metronidazole [1-(2-hydroxyethyl)-2-methyl-5-nitroimidazole] is a broad spectrum antimicrobial agent. It is used in the eradication of *Helicobacter pylori* Infections which is responsible for developing gastritis, gastric ulcer and gastric carcinoma. Due to the short biological half-life (6-8 h) and bitter taste which may lead to compliance issues; the present study was to develop and evaluate metronidazole loaded carbopol 934P mucoadhesive microcapsules for sustained drug release at the gastric mucosa for treatment of *H. pylori* infection. Metronidazole mucoadhesive microcapsules were formulated by ion gelation technique using 3² factorial designs. A 3² full factorial design was used to derive a statistical equation, ANOVA analysis, contour plots and 3D response surface plots. Different polymer ratios of carbopol 934P and sodium alginate were used to formulate nine formulations (F1 to F9) of carbopol 934P loaded mucoadhesive microcapsules of amoxicillin. The *In vitro* drug release and mucoadhesion was carried out by USP29 type-II tablet dissolution test apparatus and disintegration tester using goat stomach mucosa. The formulation was characterized by determining possible drug-polymer interaction using FT-IR, percentage of yield, particle size, percentage of entrapment efficiency, swelling index, percentage of mucoadhesion and percentage of drug release. FT-IR spectroscopy demonstrated that there was no interaction between the drug and polymers combined. The optimized formulations F9 exhibited a high drug entrapment efficiency of 87.74±0.03%, particle size of 845.40±0.02 (µm), percentage yield of 97.80±0.01%, swelling index of 102.33±0.01%, percentage of mucoadhesion after 8 h was 64±0.04% and the drug release (52.30±0.06%) sustained more than 14 h. The kinetics of the drug release of amoxicillin mucoadhesive microcapsules formulation showed good fitting with zero order and Korsmeyer-Peppas model equation followed by a non-Fickian type of release. The *in vitro* release study indicates that the mucoadhesive microcapsules of metronidazole could sustain the release of the drug for more than 14 h. Similarly, the *in vitro* mucoadhesive test showed that metronidazole mucoadhesive microcapsules adhered more strongly to the gastric mucous layer and could retain in the gastric mucosa for an extended period of time, consequently increasing bioavailability, patient's compliance and reducing dosing frequency. The study shows that metronidazole mucoadhesive microcapsules can be effectively used for sustained drug release to the gastric mucosa in treatment of *H. pylori* infection.

Keywords: Metronidazole, mucoadhesive drug delivery, factorial designs, Ion gelation technique, ANOVA analysis

DAY 1, 27 JUNE 2018, WEDNESDAY

PARALLEL SESSION I

PHARMACY PRACTICE

Venue: Concorde I, Level 2

Chairperson: **Assoc. Prof. Dr. A'edah Abu Bakar**

INVITED SPEAKER I (14.30 – 15.00)

ETHICAL CONSIDERATIONS IN PHARMACY PRACTICE RESEARCH

Dr. Yogheswaran Gopalan, Senior Lecturer, Department of Pharmacy Practice, Faculty Of Pharmacy, Universiti Teknologi MARA, Selangor, Malaysia.

ORAL PRESENTATIONS I (15.00 – 17.00)

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OPP2 15.15	PREVALENCE, FACTORS AND COST COMPARISON ASSOCIATED WITH POTENTIALLY INAPPROPRIATE MEDICATIONS (PIMS) BY BEERS CRITERIA AMONG ELDERLY OUTPATIENTS IN HOSPITAL TUANKU FAUZIAH (HTF), MALAYSIA Ang Wei Chern, Hospital Tuanku Fauziah, Kangar, Malaysia	2
OPP3 15.30	MEDICATION OMISSION ERRORS IN THE EMERGENCY DEPARTMENT Lim Chiew Yin, Hospital Serdang, Malaysia.	3
OPP4 15.45	PREVALENCE OF MEDICATION ERRORS AT AN EMERGENCY DEPARTMENT OF A TEACHING HOSPITAL IN MALAYSIA Zayyanu Shitu, Universiti Sultan Zainal Abidin, Kuala Terengganu, Malaysia	4
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OPP6 16.15	PRIOR ANTIPLATELET USE AND CLINICAL OUTCOMES IN THOSE UNDERGOING PERCUTANEOUS CORONARY INTERVENTION Hoo Yee Yin, Hospital Serdang, Malaysia	6
OPP7 16.30	ASSOCIATION OF SITE AND SOURCE OF INFECTION IN ICU SEPSIS PATIENTS: IMPACT ON CLINICAL OUTCOMES Khalid A. Al_Sunaidar, Universiti Teknologi MARA, Puncak Alam, Selangor, Malaysia	7

PARALLEL SESSION II

PHARMACEUTICS AND LIFE SCIENCES

Venue: Grand Patio, Level 2

Chairperson: **Asso. Prof. Dr. Shariza Sahuddin**

INVITED SPEAKER II (14.30 – 15.00)

MICROWAVE AS FUTURE SKIN PENETRATION ENHANCER IN DRUG DELIVERY

Prof. Dr. Wong Tin Wui, Research fellow of Integrative Pharmacogenomics Institute (iPROMISE), Faculty of Pharmacy, Universiti Teknologi MARA, Selangor, Malaysia.

ORAL PRESENTATIONS II (15.00 – 17.00)

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OPL2 15.15	KETAMINE HYDROCHLORIDE AS INTRANASAL ANAESTHESIA IN PET BIRDS Vellayan Subramaniam, Universiti Teknologi MARA, Puncak Alam, Selangor, Malaysia	31
OPL3 15.30	FORMULATION OF NANOPARTICLE OF SERUM ETHANOLIC FRACTION OF STEM (<i>Jatropha multifida</i> Linn.) WITH GELATION IONIC METHOD Risky Guslidayani, Universitas Islam Indonesia, Indonesia	32
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PHARMACOLOGY AND CHEMISTRY

Venue: Patio I, Level 2

Chairperson: **Dr. Gurmeet Kaur Surindar Singh**

INVITED SPEAKER III (14.30 – 15.00)

RECENT ADVANCES IN THE MANAGEMENT OF GLAUCOMA

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OPL3 15.30	QUANTITATIVE PHYTOCHEMICAL INVESTIGATION AND ANTHELMINTIC ACTIVITY OF <i>PSOPHOCARPUS TETRAGONOLOBUS</i> Sylvia Joanne Laurence, KPJ Healthcare University College, Negeri Sembilan, Malaysia	25
OPC4 15.45	F8268-A3-INDUCED ANTI-ANGIOGENICITY IS MEDIATED, IN PART, THROUGH DOWNREGULATION OF VASCULAR ENDOTHELIAL GROWTH FACTOR AND UPREGULATION OF THROMBOSPONDIN Lim Siong Meng, Universiti Teknologi MARA, Selangor, Malaysia	26
OPC5 16.00	SYNTHESIS AND EVALUATION OF SINENSETIN AS A POTENTIAL ANTI-INFLAMMATORY AND ANTI-ANGIOGENESIS AGENT Abdulmenem S. Bakkouri, University Sains Malaysia, Penang, Malaysia	27
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DAY 2, 28 JUNE 2018, THURSDAY

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PHARMACY PRACTICE

Venue: Concorde I, Level 2

Chairperson: **Dr. Hannis Fadzillah Mohsin**

INVITED SPEAKER IV (14.30 – 15.00)

THE CONTRIBUTION OF COMPLEMENTARY AND ALTERNATIVE MEDICINE TO SUSTAINABLE HEALTH CARE

Dr. Maryam Farooqui, Assistant Professor, Head of Pharmacy Practice, Unaizah College of Pharmacy, Qassim University, Saudi Arabia.

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OPP10 15.30	PATIENT KNOWLEDGE OF HYPERTENSION: A COMPARISON BETWEEN DEVELOPED AND DEVELOPING COUNTRIES Samah Hussein, Qassim University, Saudi Arabia	10
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Venue: Grand Patio, Level 2

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INVITED SPEAKER V (14.30 – 15.00)

PROBIOTICS AND GUT REVIVAL: IT IS ALL ABOUT BALANCE

Assoc. Prof. Dr. Kalavathy Ramasamy, Microbiologists, Department of Pharmaceutical Life Sciences & Head of the Collaborative Drug Discovery Research (CDDR) Group, Faculty of Pharmacy, Universiti Teknologi MARA, Selangor, Malaysia.

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OPP16 15.30	OPTIMIZING DIABETES MANAGEMENT IN PATIENT WITH TUBERCULOSIS DURING DOT VIA COLLABORATIVE PHARMACEUTICAL CARE SERVICE IN HOSPITAL SULTANAH NUR ZAHIRAH, KUALA TERENGGANU: AN ACTION RESEARCH STUDY Nurulhayati Abd Jamal, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Malaysia	15
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INVITED SPEAKER V (14.30 – 15.00)

STARZ-DRP: A PROSPECTIVE APPROACH TO ENSURE THE IMAGE OF COMMUNITY PHARMACIST AS A SUPREME MEDICATION PROTECTOR

Mr Nazri Nordin, Consultant Pharmacist, Farmasi Nazri, Penang, Malaysia

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COMPARATIVE STUDY OF DRUG CLASSIFICATION: A LITERATURE REVIEW

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Abstract

Thai FDA is amending Drug Act BE 2510. One of the revising issues is drug classification. This study aimed to compare drug classification among 6 countries; USA, UK, New Zealand, Canada, Japan and Thailand. Literature search was conducted using government website and credible published sources. Three drug groups; antihistamine, nonsteroidal anti-inflammatory drugs (NSAIDs), and peptic ulcer drug, were used as proxy to see actual drug classification practice. It was found that all countries classified drug in two major categories, prescription and non-prescription drugs. The USA is the only country that classified drug in two categories (prescription vs over-the-counter), while five other countries categorised non-prescription drugs in 2-3 subgroups. Non-prescription was categorised by control measure [e.g. control by pharmacist (i.e. pharmacy-only medicine (UK), or control by distribution channel (i.e. schedule 3 drug (NZ), or not control by person or place (e.g. general sale list (UK, NZ, TH))]. When comparing three drug groups across six countries, it was found that Ibuprofen, cimetidine, ranitidine, cetirizine, loratadine, fexofenadine 60 mg were NSAIDs, peptic ulcer drug and antihistamine unanimously classified as non-prescription drugs among the six countries. In Thailand, all drug items in three drug groups were classified as dangerous drug which did not need prescription, but require pharmacist to hand drugs to patients. While in Japan, all PPI, most NSAIDs except ibuprofen, and third generation antihistamine except fexofenadine, were classified as prescription drugs. In conclusion, drug classification alone might not be effective enough strategy to ensure patient safety. Other system factors such as pharmacovigilance system, health insurance system, separation of prescribing-dispensing, and patient literacy play key role in each government drug classification decisions.

Keywords: Drug classification, Prescription drugs, Non-prescription drugs, Over-the-counter drugs

PREVALENCE, FACTORS AND COST COMPARISON ASSOCIATED WITH POTENTIALLY INAPPROPRIATE MEDICATIONS (PIMS) BY BEERS CRITERIA AMONG ELDERLY OUTPATIENTS IN HOSPITAL TUANKU FAUZIAH (HTF), MALAYSIA

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Abstract

Malaysia will be a full ageing nation by 2030. Elderly (aged 65 years and above) population often have multiple comorbidities. Hence, they are at risk of polypharmacy and potentially inappropriate medications (PIMs). This study aimed to investigate the prevalence and factors associated with PIMs among elderly outpatients in HTF, and its burden of direct pharmacotherapy cost to the Ministry of Health Malaysia. This is a cross-sectional study involving clinic prescriptions among the elderly with more than one-month prescribing duration received by the outpatient pharmacy from 1st March 2017 to 15th April 2017. Patient identifiers were keyed-in initially in Microsoft Excel and were screened using Pharmacy Information System (PhIS) to exclude multiple visits and duplicate prescriptions. Patients were categorised as PIM group and non-PIM group using Beers Criteria 2015. Logistic regression analysis was conducted using SPSS v20.0 to examine the factors associated with PIMs. The median monthly prescription drug cost was compared between PIM and non-PIM groups by Mann-Whitney test. Of the 472 patients, 38.9% patients had at least one PIM while 61.1% patients did not receive any PIM. 96.8% of patients only visited one type of clinic compared to only 3.2% visited more than one clinic. The number of medications prescribed was an independent risk factor for the prescribing of PIMs (OR: 2.04; 95% CI: 1.40, 2.97). The median monthly prescription cost for PIM group was MYR 29.50 (≈USD 7.53) which was not statistically significant ($p=0.735$) as compared to the non-PIM group which was MYR 28.50 (≈USD 7.28). This study showed that PIM was frequently prescribed in HTF with the number of medications as the only factor. However, the prescribing of PIM did not add nor reduce direct cost of pharmacotherapy in our setting.

Keywords: Potentially inappropriate medication list; patient safety; drug-related side effects and adverse reactions; polypharmacy

MEDICATION OMISSION ERRORS IN THE EMERGENCY DEPARTMENT**LIM CY, CHONG MM, KHOO SP, TAN WH, NUR AINA DIANA CD, WONG KH, VIVIAN CHENG EM, NURJALILAH MR****Department of Pharmacy, Hospital Serdang, Malaysia. Email: cath_lim612@yahoo.com**

Abstract

The fast pace and emergency nature of care at emergency department (ED) is an area prone for medication errors. These errors may threaten patients' health and cause unwanted events. The study described the medication omission errors (MOE) at ED, Hospital Serdang. A cross sectional study was conducted among 20 patients who were pending for ward admission between April to August 2017. Past medication history, obtained through patient interviews, were compared with medication charts (manual and electronic) and administration medication records. Medication omission errors (MOE) defined as failure to administer an ordered dose to a patient before the next scheduled dose or failure to prescribe a medication that is indicated. The MOE were detected at 3 stages i.e. prescribing on manual prescription, ordering medication via electronic system, and administering medications. The MOE were further classified into prescribing omission error (PresOE) and administering omission error (AdmOE). A total of 200 medications were administered to 20 patients. The highest frequency of MOE was electronic PresOE (69.3%), followed by AdmOE (27.5%) and manual PresOE (24.4%). The most common medication that encountered PresOE was lipid lowering agents (33.3%), followed by antihypertensives (24.2%) and supplements (18.2%). On the contrary, the highest frequency of AdmOE pertaining to antihypertensive medication (28.6%). Medication omission errors happened during prescribing and administering stages especially in the setting of a busy emergency department. Thus, mitigation strategies are crucial for reducing MOE and preventing any unwanted adverse event in EDs.

Keywords: Medication omission error, emergency department, patient safety

PREVALENCE OF MEDICATION ERRORS AT AN EMERGENCY DEPARTMENT OF A TEACHING HOSPITAL IN MALAYSIA

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Abstract

Medication error (ME) is any preventable harm caused to patient during medication process while the medication is in the control of both healthcare practitioner and patient or the patient's caregiver. Previous studies conducted in Malaysia reported the proportion of 11.7% to 97.7% of ME in different hospital settings. However, little is known about the prevalence of ME at emergency department (ED) in Malaysian hospitals. The objective of this study was to determine the prevalence of ME at an ED of a teaching hospital in Malaysia. A cross-sectional study was conducted over the period of nine weeks (8 am -5pm) on patients who visited the ED of Hospital Universiti Sains Malaysia (HUSM), Kelantan, Malaysia. Data on patient medication orders and demographic information was collected from the doctor's clerking sheet. Observations were made on nursing activities and these were documented in the data collection form. Other information related to the administration of medications were obtained from the nursing care records. Data were collected for 547 patients who were assigned to various treatment zones in the ED. 311 were randomly selected for analysis. 95 patients had at least one ME. The prevalence of ME was 30.5%. The most common types of ME were wrong time error (64.2%), unauthorized drug error (34.7%), omission error (25.3%) and dose error (12.6%). Patients with motor vehicle accidents, sepsis cardiovascular, respiratory and gastric disorders were the most commonly affected. 86.6% of the ME were potentially harmful, while 13.4% of the ME caused harm to the patient. No death was recorded. The prevalence of ME in our ED setting is high. However, the majority of them did not result in patient harm. Intervention measures are needed to prevent further occurrence.

Key words: Medication Error (ME), Emergency Department (ED), Doctors, Nurses

SYSTEMATIC REVIEW OF ADHERENCE TO DIRECT ORAL ANTICOAGULANTS IN PATIENTS WITH ATRIAL FIBRILLATION IN CLINICAL PRACTICE

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Abstract

Direct oral anticoagulants (DOACs), such as dabigatran and rivaroxaban, have in the past decade replaced vitamin K antagonists (VKAs), such as warfarin, as standard treatment for thrombosis prophylaxis and stroke prevention in patients with atrial fibrillation (AF). Adherence to DOACs is crucial to optimise clinical outcomes in patients with AF. The aim of this review is to systematically evaluate published evidence describing adherence to DOACs in patients with AF in real world clinical practice. A systematic search combining terms for direct oral anticoagulants, atrial fibrillation and relevant adherence measurement tools was conducted in PubMed in March 2018 to identify related English language publications. All observational cohort studies that assessed adherence of DOACs in patients with AF by using healthcare institution databases, including pharmacy records, medical claims datasets, and other relevant data were reviewed for inclusion. Data describing study characteristics and adherence profile were extracted and summarised using qualitative methods. The PubMed search identified 278 citations. After screening the titles and abstracts, full articles were obtained for 36 articles and of these, 22 articles were included. These 22 studies involved around 300,000 AF patients, described the adherence of DOACs in clinical practice in the United States, Europe, and Turkey and were published between 2013 to 2018. Proportion of days covered (PDC) was the most commonly used tool for adherence measurement followed by medicine possession ratio (MPR). Adherence to DOACs was found to be good in most studies, defined as PDC $\geq 80\%$ and MPR $\geq 80\%$. While these published evidence indicated that adherence to DOACs in real world clinical practice is generally good, clinical outcomes can be optimised by identifying AF patients with sub-optimal adherence and developing interventions to improve adherence in these patients within clinical practice.

Keywords: Adherence, Oral anticoagulant, Atrial fibrillation, Proportion of days covered (PDC), Medicine possession ratio (MPR)

PRIOR ANTIPLATELET USE AND CLINICAL OUTCOMES IN THOSE UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

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Abstract

Antiplatelets are used as primary prevention in patients with high cardiovascular risk, in secondary prevention as well as treatment of acute coronary syndrome (ACS). Studies have assessed the benefits of prior antiplatelet use in reducing all-cause mortality or coronary artery disease readmissions; however, there is lack of data on the impact of prior antiplatelet use on the successfulness of and development of complications during hospitalization post primary percutaneous coronary intervention (PPCI). The present study was undertaken to evaluate whether prior antiplatelet use is associated with better clinical outcomes than non-prior antiplatelet use. Patients were identified from the PPCI patients' list in Hospital Serdang between May 2015 and November 2016. Data were collected via the electronic Hospital Information System (eHIS). Patients were grouped according to whether they were prior antiplatelet (PAP) users or non-antiplatelet (NAP) users. PAP users are defined as those who use antiplatelet agents within 30 days before admission (not immediately before PPCI). Outcome measures (cardiovascular (CV) events and bleedings) during hospitalization were compared using logistic regression analysis adjusted for important clinical factors. Cardiovascular events include ACS, stroke, stent thrombosis and death. A total of 227 patients [male 89%, median age 54 years] were included. Of these, 25.6% were PAP users and 72.2% were NAP users. During hospitalization, CV events for PAP and NAP were 5.2% vs 4.3% respectively (adjusted OR=1.22; 95% CI: 0.30-4.94; p=0.774). On the other hand, bleeding complication was 5.2% for PAP users and 4.3% for NAP users (adjusted OR=1.33; 95% CI: 0.32-5.58; p=0.695). Prior antiplatelet use before PPCI was not associated with lower risk of CV events and bleeding complications during hospitalization in patients who had PPCI after adjustment for common factors. However, this is a small retrospective analysis and need exploring in future studies.

Keywords: prior antiplatelet use, percutaneous coronary intervention, cardiovascular events, bleeding complications

ASSOCIATION OF SITE AND SOURCE OF INFECTION IN ICU SEPSIS PATIENTS: IMPACT ON CLINICAL OUTCOMES

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Abstract

Source control in sepsis is required to identify the infection source and to be followed by intervention (surgical or non-surgical therapeutic approaches) used to control specific site of infection and to change influences that enhance the microorganism involvement or that decrease the self-defense immunity mechanisms. This study determined the association of source or site of infection in ICU patients and predictors or risk factors for mortality, APACHE II and ICU-LOS. A retrospective cohort study conducted in tertiary ICU hospital (Sungai Buloh) in Selangor. 228 adult patients' files with sepsis met the inclusion study criteria were reviewed. Univariate and multivariate (MVA) logistic & cox regression modelling were performed to detect relationship between site or source of infection-(SI) and ICU-mortality. Also, univariate and (MVA) linear regression were used for determining association between (SI) with APACHE II score and ICU length of stay (LOS). Across all sites of infection, majority of the patients were with community acquired infection (CAI) 118 (51.8%), while the rest were with hospital acquired infection (HAI) 110 (48.2%). In univariate logistic regression, the unknown source (US) of infection was significant predictor for non-survival OR=0.293 (95% CI: 0.092-0.936; $P=0.038$). Also, in simple linear regression (SLR), other sources such as the abdominal infection $R^2=0.022$ (95% CI: .315-4.716; $P=.025$) was predictor to increase the APACHE score, while Diabetic food ulceration /Amputation $R^2=0.107$ (95% CI: -12.177- -.442; $P=.035$) and Neuro source infection(NSI) $R^2=0.107$ (95% CI -6.891- -2.823; $P=.000$) were predictors for reduction of severity index APACHE II score respectively. However, in MVA, only the (NSI) was significant predictor for APACHE score reduction $R^2= -7.779$ (95% CI: -12.050- -3.508; $P=.001$). In addition, in (SLR) the HAI $R^2=0.034$ (95% CI: -5.614- -1.006; $P=.005$) and surgery source(SS) $R^2=0.030$ (95% CI: .766- 5.401, $P=.009$) were predictors for increment in ICU-LOS respectively. While, in MVA, only the (SS) was significant predictor for ICU-LOS $R^2=0.478$ (95% CI: .408- 4.045, $P=.017$). In addition, in simple cox regression, the (SS) risk HR. 1.533 (95% CI: 1.131-2.078, $P=.006$) and CAI the risk HR. 1.389 (95% CI: 1.041-1.854, $P=.026$) were significant risk factors for ICU mortality respectively. The unknown source of infection was predictor for non-survival. Additionally, the neuro source of infection was predictor for reduction of APACHE II score. While, the surgery source was predictor to increase ICU-LOS. CAI and surgery were also risk factors for ICU mortality. The prompt control for source of infection in sepsis, would improve the survival and other clinical outcomes.

Keywords: Infection, site, source, Sepsis, APACHE II, ICU- length stay, predictors, risk factors, mortality

KNOWLEDGE, ATTITUDE AND PRACTICE OF CAREGIVERS ON MEDICATION MANAGEMENT AT RESIDENTIAL AGED CARE FACILITIES

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Abstract

Apart from an increasing trend in the aged population, an escalating proportion of the aged group is associated with a growth in the prevalence of ill health. Caregivers at residential aged care facilities (RACFs) play an important role in managing residents' medications, however studies on medication management and caregivers is lacking. This study assessed the knowledge, attitude and practice (KAP) of caregivers on medication management at RACFs. It was a cross-sectional study involving caregivers of 90 RACFs throughout the country. A pilot study was conducted to test content and face validity. The self-administered questionnaire was developed based on extensive literature review and expert's opinions containing 42-items divided into three domains of knowledge (22 questions), attitude (6 items) and practice (13 questions). Response rate was 71% with 128 questionnaires returned. Internal consistency reliability measured by Cronbach's coefficient alpha for knowledge, attitude and practice was 0.631, 0.666 and 0.575 respectively. The mean age of respondents was 41.30 ± 14.3 and length of service was 9.26 ± 7.86 . A majority of caregivers (71.9%) know what medication management is, however, 48.4% have not ever experienced any training on it. A median score of 77.27% for knowledge, 70.83% for attitude and 68.66% for practice was obtained. Interpretation of the assessment scores for the domains were proposed as good, moderate and poor. More than half of the respondents possessed good level of knowledge (69.5%, n = 89), around half (57.8%, n = 74) had good attitude and less than half (46.9%, n = 60) had good practice of medication management. Level of education, special qualification and experience of medication management training were the factors that correlated with better score outcomes ($p < 0.05$). More support and training programs on medication management could be conducted by pharmacists for caregivers to enable improvements in residents' medication use.

Keywords: attitude, caregivers, knowledge, medication management, practice, residential aged care facilities

STROKE KNOWLEDGE AMONG CAREGIVERS OF STROKE SURVIVORS

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Abstract

Incident of stroke is increasing among Malaysian. Family members who serve as informal care providers have a critical role in the general management of stroke survivors after discharged. Lack of stroke knowledge may lead to fear, misconceptions and inappropriate behaviour that will potentially interfere with the process of seeking medical attention and suboptimal secondary prevention. There is limited study on level of stroke knowledge and misconceptions in caregivers of stroke patients in Malaysia. This study aimed to provide an overview of current stroke knowledge among the caregivers of stroke survivors in Malaysia. A cross-sectional survey was conducted in Universiti Kebangsaan Malaysia Medical Centre and National Stroke Association of Malaysia. Caregivers of stroke survivors were selected conveniently and data was collected within two months period. Stroke Knowledge Test was used to evaluate the current stroke knowledge among the samples. Overall, 200 caregivers were recruited in this study. The mean age of the caregivers was 42.7 years. Majority of the caregivers were Malay (46%), female (58.5%), married (70.5%) and had less than three years of caregiving experience (80.5%). This study highlighted that stroke caregivers had intermediate knowledge towards stroke disease, with stroke knowledge score of 9.63 (SD=3.14). Analyses undertaken to explore determinants of stroke knowledge revealed gender ($p=0.039$), race ($p<0.001$), education level ($p<0.001$), relationship ($p=0.003$) and previous experience of studying or working in health related sector ($p=0.008$) as significant predictors. Overall, the stroke knowledge score in our samples were moderate. There is a need to develop stroke education programs for family caregivers to improve their overall knowledge and standard of care.

Keywords: stroke, knowledge, caregivers, survivors

PATIENT KNOWLEDGE OF HYPERTENSION: A COMPARISON BETWEEN DEVELOPED AND DEVELOPING COUNTRIES

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Abstract

Hypertension, or high blood pressure, is commonly recognized as a worldwide health problem that affects nearly twenty percent of the adult population on the planet. Although hypertension can be diagnosed with simple equipment that is available in all countries around the world and controlled with lifestyle changes and medication, it has been known to cause a number of serious conditions and diseases. The present paper aimed to reveal the differences between the patients' knowledge of hypertension in developed and developing countries as a part of the quality assessment to improve the control outcome of the disease. PubMed central, Scopus, Google, and Google Scholar were searched for the articles about patient hypertension knowledge. These studies were evaluated and relevant data were abstracted, summarized and compared. The review showed that a greater knowledge in the developed countries was possessed by women, overweight, obese individuals and those without financial barriers. In addition, this study found that hypertension awareness was low in both developing and developed countries and urban populations possessed more knowledge about the specifics of the condition, such as proper definition and implications. Also, a wide range of reviewed scholar inquiries have shown that many people were not diagnosed with hypertension even though they had already developed the condition. Moreover, it was discovered that both rural and urban residents did not possess sufficient knowledge that would allow them to keep blood pressure under control in an effective way. Also, the study showed that the most popular predictors of better knowledge were female sex and age over 65. Further research might be conducted to identify other specific areas that lack hypertension knowledge for patients in developed and developing countries to prevent further increase of the global hypertension level, provide individualized treatments and reduce the total health care costs.

Keywords: Hypertension, hypertension-related knowledge, life-style practices, hypertensive patients, blood pressure

PATIENTS' PERCEPTION OF THEIR SUBSIDIZED MEDICATIONS COST AND ITS ASSOCIATION WITH MEDICATION ADHERENCE BEHAVIOUR

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Abstract

Non-adherence among patients with medication subsidies may result in medication wastage and increase in the country's economic burden. However, factors that contribute to non-adherence among patients receiving medication subsidies remains unknown. Thus, this cross-sectional study was conducted to evaluate the perception of patients on the cost, perceived quality and effectiveness of their subsidised medications and its influence on medication adherence behaviour. The study was conducted from September to November 2017 at outpatient pharmacy, Universiti Kebangsaan Malaysia Medical Centre (UKMMC). Patients were conveniently recruited in the study if they received treatment at UKMMC, aged 18 years old and above, take at least one prescribed medication and able to understand Malay, English or Mandarin language. Patients who agreed to participate were interviewed and asked to fill the Malaysian Medication Adherence Scale (MALMAS). Binary logistic regression model was used to determine factors that influence patient's underestimation of subsidised medication costs and patients' adherence to medication. Variable with a p-value of <0.05 was considered as significant. A total of 211 patients participated in this study. Patients who were unaware of their medication cost and perceived medication as of not good quality were 7.75 and 5.72 times more likely to underestimate the medication costs ($p < 0.05$) than those who were aware. While, partially subsidised patients and those with income of RM1000-2000 were 0.31 and 0.28 less likely to underestimate the cost of medications ($p < 0.05$). However, when medication non-adherence was modelled, partially subsidised patients were 1.91 more likely to be non-adherent than those who received medication as fully subsidised ($p = 0.04$). In addition, those who perceived their medication as not effective were 2.93 times more likely to be non-adherence than those who perceived their medication as effective ($p = 0.002$). In conclusion, inaccurate estimation of medication costs does not influence patients' medication adherence behaviour. Providing medication as fully subsidised and ensuring perceptions of medication as effective may help to increase patients' medication adherence.

Keywords: perceived cost; subsidized medication; medication adherence

SELF-EFFICACY IN MEDICATION USE AND UNDERSTANDING AMONG HYPERTENSIVE MAURITIANS

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Abstract

Critical issue of misunderstanding medication instructions focuses not only the act of taking medication but the understanding on how the medication has to be taken. The study aimed to determine the level of self-efficacy in medication use and understanding, and its attributable parameters among hypertensive Mauritians. In this cross-sectional study, medication use and understanding self-efficacy scale (MUSE-8) (Cronbach's alpha = 0.951) was disseminated among hypertensive Mauritians (18 - 74 years old) at 4 public hospitals receiving treatment with at least one antihypertensive medication, between January to February 2017. Using SPSS version 22, several tests (i.e. Mann Whitney U, Kruskal Wallis, Chi square and Spearman correlation tests) were performed to assess the differences, association and correlation between the independent and dependents variables respectively, with p value < 0.05 considered significant. The mean (\pm SD) MUSE score among 389 hypertensive Mauritians with mean (\pm SD) age of 54.74 (\pm 10.96) years old was 26.35 (\pm 4.02) that fall under high MUSE category (score: 24 - 32). Between MUSE and independent variables, significant differences [age categories (p < 0.001), gender (p = 0.036), education level (p < 0.001), occupational status (p = 0.001), age at first diagnosed with hypertension (p < 0.001), number of antihypertensive medication (p = 0.014)], associations [age categories (p < 0.001), ethnicities (p = 0.033), education level (p < 0.001), occupational status (p = 0.005), age at first diagnosed with hypertension (p < 0.001), number of years taking antihypertensive medication (p = 0.015), number of antihypertensive medication (p = 0.027)] and correlations [age (p < 0.001), age first diagnosed with hypertension (p < 0.001), number of years taking antihypertensive medication (p < 0.001), number of antihypertensive medication (p = 0.023)], were reported. Enrolled hypertensive Mauritians possessed high MUSE was affected by selected socio-demographics and clinical characteristics of the patients.

Keywords: Self-efficacy, medication use and understanding

IMPACT OF PHARMACIST-LED EDUCATIONAL INTERVENTIONS ON CLINICAL OUTCOMES OF PATIENTS WITH TYPE 2 DIABETES: A NETWORK META-ANALYSIS

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Abstract

Comparative effectiveness of different pharmacist-led interventions on glycaemic control and other clinical outcomes of type 2 diabetes patients is not clear. This review aimed to evaluate the impact of various pharmacist-led interventions in type 2 diabetes patients. Online search was done from five electronic databases from date of database inception to September 2017, for randomized control trials which examined the clinical effectiveness of different pharmacists-led educational interventions, directed at patients with type 2 diabetes. Glycosylated haemoglobin (HbA_{1c}) was the primary clinical outcome. Traditional and network meta-analysis were applied to evaluate clinical outcomes. Forty-three studies involving 6259 type 2 diabetes patients were included. The network meta-analysis revealed that all pharmacist-led interventions, irrespective of nature of intervention, showed statistically significant reductions in HbA_{1c} levels, when reference arm was set as usual care. Pharmacist-led diabetes education in combination with pharmaceutical care was the most effective intervention for reducing HbA_{1c} (-0.86, 95% CI [-0.983, -0.727]; $p < 0.001$; $I^2 = 55.8\%$), fasting blood sugar (-32.06; 95% CI [-35.47, -20.65]; $p = 0.001$; $I^2 = 60.0\%$), systolic blood pressure (-8.18; 95% CI [-10.97, -5.39]; $p = 0.008$; $I^2 = 59.6\%$), diastolic blood pressure (-3.15; 95% CI [-5.08, -1.21]; $p = 0.010$; $I^2 = 60.3\%$), low density lipoprotein (-0.36; 95% CI [-0.51, -0.21]; $p < 0.001$; $I^2 = 63.8\%$), triglycerides (-0.41; 95% CI [-0.61, -0.20]; $p < 0.001$; $I^2 = 0.0\%$), and, high density lipoprotein (0.08; 95% CI [0.02, 0.15]; $p = 0.04$; $I^2 = 57.3\%$). The findings of this review demonstrate all interventions had a significantly positive effect on HbA_{1c}, but there was no statistical evidence from this study that one intervention was significantly better than the other for glycaemic control. Pharmacist based diabetes education plus pharmaceutical care showed maximum effect on HbA_{1c} and rest of the clinical outcomes.

Keywords: Diabetes education, glycosylated haemoglobin, type 2 diabetes, pharmaceutical care, meta-analysis

DIABETES SELF-MANAGEMENT EDUCATION PROGRAMME: NEEDS AND CHALLENGES**WONG YUET YEN^{1*}, MOHAMED AZMI HASSALI², LIM CHING JOU³, NEOH CHIN FEN⁴**

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Abstract

Patient-driven disease self-management activities are essential in long-term type 2 diabetes mellitus (T2DM) management. To achieve good glycaemic control, T2DM patients need to undertake seven self-care behaviours, namely healthy diet, exercise, medication taking, monitoring, problem-solving, healthy coping and risk reduction. Diabetes self-management education (DSME) is therefore imperative to empower patients with the necessary skills and knowledge to manage the disease. Although evidence suggested that DSME is beneficial for patients' outcomes, debate remains on how to deliver such education. In this study, we conducted in-depth face-to-face interviews among participants who had involved in a locally developed 6-weekly DSME programme offered at community halls in the state of Penang, Malaysia. All interviews were transcribed verbatim and analysed using thematic analysis approach. Data saturation was reached and three main themes concerning the DSME programme emerged from 17 interview sessions: self-perceived effective learning model; non-threatening community setting and reaching out to wider communities. Our findings revealed that group-based education was seen as valuable to participants as they appreciated the group support and opportunity to learn from peers with the same disease. Participants enjoyed attending educational sessions with simplified analogies coupled with interactive hands-on activities. Community hall was thought to be a suitable place to conduct DSME due to its accessibility and familiar environment. Participants expressed that DSME is helpful and should be offered on a continuous basis for sustainable T2DM self-management. Health promotion strategies should be in place to reach out to wider population with T2DM, especially to engage community patients in denial and early stage. From participants' perspective, an effective DSME was deemed as one that would help them in developing necessary competency to self-manage their disease and motivate them to sustain daily diabetes self-management activities.

Keywords: Diabetes, self-care, self-management, patient education, qualitative

OPTIMIZING DIABETES MANAGEMENT IN PATIENT WITH TUBERCULOSIS DURING DOT VIA COLLABORATIVE PHARMACEUTICAL CARE SERVICE IN HOSPITAL SULTANAH NUR ZAHIRAH, KUALA TERENGGANU: AN ACTION RESEARCH STUDY

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Abstract

The association between diabetes mellitus (DM) and tuberculosis (TB) is well established. TB patients with DM took a longer time to clear M. TB during the course of treatment than non-DM patients. In Malaysia, as reported by the Ministry of Health, the total number of TB cases in 2017 was 26,168. Out of 200,043 of diabetes patients being screened, 625 of them had TB. In Terengganu, the number of diabetes with TB patients was 184. While the adherence of TB treatment was largely monitored through the directly observed treatment (DOT), most DOT visits were not utilized for DM monitoring. This qualitative study which used the action research approach was conducted in respiratory clinic, Hospital Sultanah Nur Zahirah, Kuala Terengganu. Data was collected from semi-structured interviews and field observations. Ten patients with TB and DM, nineteen health care professionals (i.e. physicians, pharmacists, nurses, medical assistants) in respiratory care team participated in the interviews. All interviews were audio recorded and transcribed verbatim. This study found that many patients still had a poor understanding of their disease management, DM control, and the importance of adherence to medication. Majority of patients had two different clinics follow-ups for these two diseases due to different specialty in disease management and time constraints. Generally, most healthcare providers who had frequent interactions with TBDM patients did play their roles in the management of DM but there was no specific guideline for TBDM counselling and the advice was given based on the individual's current knowledge and experience. Based on the study, pharmacists' exposure to TBDM patients was less compared to other healthcare providers. There is a potential role for pharmacists especially for those who had been formally trained in the DM MTAC service in managing TBDM patients during DOT. This study provides a basis for developing a detailed framework of pharmaceutical care management in TBDM patients.

Keywords: Tuberculosis Diabetes (TBDM), medication therapy adherence clinic (MTAC)

PHYSICIANS' AWARENESS OF STATINS UTILIZATION AMONG OUTPATIENTS WITH TYPE 2 DIABETES

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Abstract

The management of diabetic dyslipidaemia (DDM) remains a major challenge for physicians, as an array of lipid abnormalities characterizes it. The study aimed to compare the awareness of physicians in different specialties towards statins usage in DDM. A cross-sectional study was done at tertiary care hospital, Malaysia, January-July 2017. About 157 physicians administered a pre-tested and validated questionnaire with good reliability (Cronbach's-Alpha: 0.783). Demographic criteria, knowledge, attitudes, and practice (KAP) of statins utilization were assessed. The survey focused on the 2013 American college of cardiology/American heart association (ACC/AHA) dyslipidaemia therapy guidelines. The score of each respondent \geq the mean score was classified as good and a score $<$ the mean score was categorized as poor. IBM-SPSS V23.0 was used in data management. The distribution of respondents was as follow: medical (33.5%), intensive care unit (ICU) (16.5%), cardiology (7.5%), other (6%), 4% dermatology (4%), endocrine (3%), urology (3%), paediatric (2.5%), and rehabilitation (2.5%) department. The means of knowledge and practice score of all participants were 74.8% and 56.2%. Endocrinologists, cardiologists, rehabilitationists, dermatologists and medical had the highest knowledge of statins 85%, 84%, 82%, 78.8% and 75.4% respectively. While urologists, ICU, paediatric and medical officers' scores were 71.7%, 70%, 70% and 63.8% correspondingly. Cardiologists, endocrinologists, rehabilitationists, urologists and ICU staff practice' scores were 65%, 60%, 60%, 58.3%, and 57%, respectively. However, dermatologists, medical, medical officers, and paediatric practice' scores were 56%, 54.5% 49.1%, and 48%, correspondingly. All endocrinologists and rehabilitationists have a positive attitude about statins therapy. About 55% to 66.7% of other departments and 37.5% of urologists had a positive attitude toward statins use. Endocrinologists, cardiologists, and rehabilitation have a higher level of awareness and positive attitude which reflect on their advanced practice about statins prescribing in DDM. An educational intervention may improve the KAP scores of healthcare about statins therapy in DDM.

Keywords: Awareness, KAP, Physician, statin, type 2 diabetes

USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE AMONG PREDIALYSIS CHRONIC KIDNEY DISEASE (CKD) PATIENTS IN UNIVERSITY MALAYA MEDICAL CENTRE (UMMC)**NOORASYIKIN SHAMSUDDIN^{1*}, BENITA JOY SERAN¹, MAHMATHI KARUPPANNAN², MARYAM FAROOQUI³, WAN AHMAD HAFIZ WAN MD ADNAN⁴, SHUBASHINI GNANASAN²**

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Abstract

Chronic Kidney Disease (CKD) is a condition characterized by gradual loss of kidney function over time. The use of complementary and alternative medicine (CAM), particularly herbal medicine has raised concern in patients with CKD as they may be more vulnerable to the adverse effects and lead to worsening of their kidney function. Thus, a face-to-face interview was conducted among 240 predialysis CKD patients attending the renal clinic in UMMC from February to April 2017. A total of 230 patients agreed to be interviewed (response rate = 96.6%). The prevalence of CAM use is 51.7% (n=119). The majority of the respondents were females (53.0%, n=122), Chinese (39.1%, n=90), aged more than 60 years old (74.8%, n=172) and at Stage 4 of CKD (56.5%, n=130). There were significant associations between CAM use with the level of education and in patients with osteoarthritis ($p < 0.05$). The most commonly used CAM by the patients was biological-based therapy (79.0%, n=94), alternative medical system (15.0%, n=18) and manipulative mind body medicine (5.0%, n=6). The most common reason of CAM use was for the general health and wellness (64.0%, n=76). Most of the patients did not disclose their CAM use to their physicians (62.0%, n=74), mainly because physicians did not enquire (82.0%, n=61). In conclusion, around half of the predialysis CKD patients used CAM. Healthcare providers should be aware of the high usage of CAM among CKD patients and should advise them on the potential benefits and risks related to CAM use.

Keywords: Complementary medicine, alternative medicine, chronic kidney disease, chronic renal failure, predialysis

EFFECTIVENESS OF SMOKING CESSATION INTERVENTIONS IN MALAYSIAN PRIMARY CARE SETTING

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Abstract

Whilst overall effectiveness of a smoking cessation service in Malaysian primary care setting has been previously reported, however, none of these studies assessed the effectiveness of each smoking cessation intervention. This study aimed to evaluate the effectiveness of each smoking cessation intervention that was available in the primary care setting in Malaysia, measured as 6-month abstinence rate and also to determine the factors that associated with 6-month abstinence rate and predictors of smoking cessation. A multi-centre, retrospective cohort study was conducted. Medical records of participants who attended quit smoking clinics in Kuala Lumpur and Putrajaya from August 2015 to November 2016 were retrieved. Information on social demographics, smoking history, quit attempts and intervention types were collected, using a standardised data collection form. The primary outcome was abstinence at 6-month follow-up, confirmed by expired air carbon monoxide. Data were then analysed using SPSS version 24.0. Three hundred and thirty-four participants who fulfilled the inclusion criteria were included in this study. Overall 6-month abstinence rate was reported at 23.1%. Participants treated with counselling and varenicline achieved 32.1% of 6-month abstinence rate, followed by the group of counselling and NRT (20.8%), counselling only (15.0%) and the group of counselling, varenicline and NRT (13.0%). The 6-month abstinence rate was associated with age, baseline carbon monoxide reading, attending clinic, number of visits and the types of smoking cessation intervention. The predictors for smoking cessation were number of visit and intervention types. In the Malaysian setting, counselling with varenicline appeared to be the most effective option in smoking cessation.

Keywords: Impact, tobacco use, smoking cessation

STUDY ON EFFECTIVENESS OF METHADONE MAINTENANCE THERAPY (MMT) AND LIFE STYLE IMPROVEMENT AMONG OPIATE DEPENDENT PATIENTS REGISTERED WITH KLINIK KESIHATAN BAYAN LEPAS AND AADK TELOK BAHANG**CHRISTINA MALINI¹*, NOOR AZIZAH BINTI ABDUL WAHAB², AHMAD FUAD SHAMSUDDIN²**¹ Klinik Kesihatan Bayan Lepas, Pulau Pinang. ² School of Pharmaceutical Sciences, Royal College of Medicine, Perak.
Email: paarai03@yahoo.com**Abstract**

In Malaysia, drug addiction has been a big threat since 1983. As of the latest statistic by National Anti-Drug Agency in 2016, the number of drug abusers in Malaysia was 30,846. Acknowledging the importance of drug abuse and relapse as a public health issue, Malaysian government had implemented Harm Reduction Programme. Under this programme, Methadone Maintenance Therapy (MMT) was launched in Oct 2005. This study was undertaken to evaluate the effectiveness of MMT programme among opiate dependent individuals in their daily life. In this study, 100 individuals from the Ministry of Health (MoH), Klinik Kesihatan Bayan Lepas (Bayan Lepas Health Clinic) and Agensi Anti-Dadah Kebangsaan (National Anti-Drug Agency) in Telok Bahang were involved. The subjects were interviewed with WHOQOL BREF questionnaires before joining the MMT programme and also after a minimum of 4 months joining MMT. Results obtained was used for comparing life style implications among methadone patients before and after joining the MMT programme. Participants were predominantly of Malay ethnicity (82%). Subjects were mostly aged between 51 to 60 years old (34%). Paired t-test was done on the WHOQOL scores at baseline (before MMT) and after participation for all four domains. Each domain showed significant improvement in QOL ($P < 0.05$). The highest improvement was shown in the psychology domain with the mean value increment of 15.13 ± 17.49 . Physical domain showed the least improvement with the mean value of 9.39 ± 16.21 . This study has proven that MMT have highly contributed to improvement of quality of life among MMT clients in Klinik Kesihatan Bayan Lepas and AADK Telok Bahang.

Keywords: Effectiveness, lifestyle improvement, MMT

FACTORS ASSOCIATED WITH ERECTILE DYSFUNCTION IN PATIENTS RECEIVING METHADONE MAINTENANCE THERAPY IN HOSPITAL PERMAI, JOHOR BAHRU**SHARMEENI¹, BAA FAZLINI¹, NOOR RATNA N¹, VIKNESWARI S¹**¹Department of Pharmacy, Hospital Permai, Johor, Malaysia. Email: ssharmee89@yahoo.com**Abstract**

Sexual dysfunction among patients receiving Methadone Maintenance Therapy (MMT), still remains as an issue which is prohibited or forbidden for discussion particularly in the Asian countries. In Malaysia, erectile dysfunction (ED) is a common but often neglected side effect of opiate substitute treatment. Yet, it is highly clinically relevant as it may interfere with therapeutic compliance to MMT. This study is conducted to study the prevalence of ED among patients on MMT and the factors associated in male patients on MMT in Hospital Permai, Johor Bahru. Self-administered questionnaire using International index of erectile dysfunction (IIEF-15) Malay Version was used. A total of 41 respondents responded to this survey, giving a response rate of 100%. The prevalence rate of ED among MMT patients in this study is 70.73%. The mean age was 39.12 (SD 9.73) years, the mean dose of methadone was 53.90 (SD = 34.99) mg and the mean of MMT duration is 19.32 (SD = 11.06) years. No significant difference was found between dose and duration of methadone among patients with and without ED. As for alcohol consumption, the majority of respondents (51.22%) are currently not consuming alcohol whereas (48.78%) of them are still consuming alcohol. All respondents (100%) are noted to be active smokers. No significant associations were found between ED and clinical variables in patients receiving MMT in Hospital Permai, Johor Bahru. The clinical profile of patients with ED did not differ significantly from the group without ED. The high prevalence rate of ED among MMT patients in this study is indicative of a need for further research with larger sample size to expose the relationship between clinical variables and ED among patients receiving MMT.

Keywords: Erectile dysfunction, methadone, methadone maintenance therapy, IIEF-15

PROMOTION OF MALARIA PREVENTION BY COMMUNITY PHARMACIST: A STUDY FROM SUDAN

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Abstract

Malaria is one of the top diseases with high mortality in Sudan. It constitutes a great social and economic burden to the community. Malaria prevention is a cornerstone in elimination of the disease. As in many African and Asian countries, community pharmacists in Sudan are contributing in the process of malaria prevention and treatment. This research was carried out to assess the contribution of community pharmacist in malaria prevention. The study was carried in Khartoum (country) between June to December 2016. Total of 293 pharmacists participated in the study. Data was collected via structured pre tested self-administered questionnaire. Data was analysed using SPSS version 23. The age of 92.2% of the respondents was between 20-39 years and 63.8% were having < 5 years of experience. Insecticides treated bed nets (ITNs) and mosquito repellent sprays and creams (MRs) were stocked in 80.5% and 93.9% of the pharmacies respectively. 5.5% of the pharmacists never educated the patients on use of prevention methods; however, 44.7% reported that sometimes they did. About 80.2% and 76.8% of the pharmacists educated the patients to use ITNs and MRs respectively. Near half of the pharmacists (47.7%) dispensed drugs for prophylaxis. The pharmacists showed poor knowledge regarding Intermittent Preventive Therapy of malaria in pregnancy. Barriers to effective contribution of community pharmacist in malaria prevention were lack of knowledge (50.9%), lack of time (35.8%) lack of training (72%) and lack of pharmacist-patient communication. Training is required for effective contribution of community pharmacist in malaria prevention.

Keywords: Malaria prevention, community pharmacist, Sudan

CONSUMERS' PERCEPTION TOWARDS PHARMACEUTICAL CARE SERVICES PROVIDED BY THE COMMUNITY PHARMACISTS IN KUALA LUMPUR

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Abstract

Community pharmacists have a major role in providing effective pharmaceutical care services to the public. Therefore, this study aimed to evaluate consumers' perceptions towards pharmaceutical care services provided by the community pharmacists. A total of 455 respondents were included in this study. The respondents were approached by random sampling at public areas in three districts of Kuala Lumpur. Results shown that about 48.4% of the total respondents visited community pharmacy every few months in which 69.5% of them obtained other products than medication. Respondents have good views towards community pharmacists. About 55% of them perceived that community pharmacists have a good balance in providing services towards patient's health and maintaining the business. However, the physician was chosen as the primary sources of reference (51.4%) for drug-related questions compared to the pharmacists and other related reference source. They put high trust on physician (45.2%) while 37.9% were unaware on the ability of the community pharmacists to answer inquiries. In contrast, community pharmacists were the preferred source of reference when it comes to minor illness (92.1%). About 50% of the respondents frequently received patient education services related to the medications and the purpose of prescription and non-prescription medication (45.3%). Three essential services that should be provided by the community pharmacists were the explanation on the indication, side effects of medications and advice on the usage of supplement and herbal products. There were significant associations between respondent's age, level of education and salary background with some of the expected services ($p < 0.05$). Positive response was received on the two pharmaceutical care services which are home medicine review (92%) and consultation via media electronic media (95.6%). In conclusion, consumer's awareness on the role of community pharmacist in providing pharmaceutical care services still need further improvement.

Keywords: Community pharmacist, pharmaceutical care services, consumer, perception

EVOLVING TRENDS IN DRUG DISCOVERY: BIOTRANSFORMATION A TOOL FOR GREEN CHEMISTRY REACTIONS**SADIA SULTAN*, SHARIFAH NURFAZILAH BINTI WAN YUSOP, MOHD ILHAM ADENAN****Faculty of Pharmacy, Atta- ur-Rahman Institute For Natural Product Discovery (AuRIns), Universiti Teknologi MARA, Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor D.E, Malaysia. Email: drsadia@puncakalam.uitm.edu.my / sadiasultan301@yahoo.com**

Abstract

One of our extremely serious health threats is antimicrobial resistance. Hence, there is a pressing need to develop new antimicrobial therapies due to the significant threat of multidrug resistant pathogens and the persisting evolution of resistance. The power to combat infectious diseases deteriorates with the loss of effective antimicrobials; and healthcare professionals will also struggle to manage infectious complications common in high risk patients. Some examples of high risk patients are individuals that are undergoing chemotherapy treatments, in surgery, and organ transplantation, which are vulnerable to secondary infections. Natural products accounts for 60% of the total market, making them as a major source of drug discovery. Some of these are sourced from cultivation of microorganisms. This approach started with Fleming's serendipitous discovery of penicillin from the filamentous fungi, *Penicillium notatum* in 1929. His findings have raised the intensive probe of Nature as a source of novel bioactive agents. Biotransformation, which is also known as bioconversion, is a method of chemical alteration of organic complexes by organisms or enzymes. Biotransformation is described as regio-selective and stereo-specific chemical transformations that are performed by valuable enzyme configurations in the biological systems. The transformations result in foundation of novel and useful products that are complex to be achieved through conservative chemical techniques. It is an alternative tool for the growth of sustainable technologies for the production of chemicals and drugs, which means green chemistry.

Key Words: Biotransformation, Green chemistry, filamentous fungi

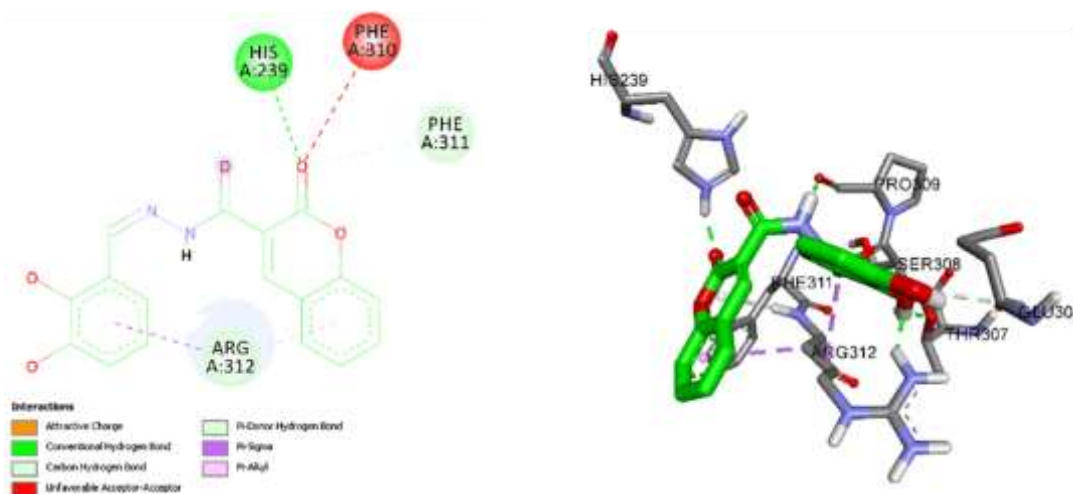
SYNTHESIS, *IN VITRO* α -GLUCOSIDASE INHIBITORY POTENTIAL AND MOLECULAR DOCKING STUDY OF COUMARIN-BASED DERIVATIVES

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Abstract

Type 2 diabetes mellitus is a metabolic disease characterized by hyperglycemia. It is one of the most common noncommunicable diseases, rising to epidemic proportions globally, and undoubtedly one of the most challenging public health problems in the twenty-first century. α -Glucosidases are membrane-bound enzymes that help absorption of glucose in the small intestine. Thus, inhibition of α -glucosidase can significantly decrease the postprandial hyperglycemia after a mixed carbohydrate diet and can be a key strategy in the control of type 2 diabetes mellitus. In this regard, we have synthesized seventeen coumarin-based derivatives (**1–17**), characterized by ¹HNMR, ¹³CNMR and EI-MS and evaluated for α -glucosidase inhibitory potential. Among the series, all derivatives revealed outstanding α -glucosidase inhibition with IC₅₀ values ranging between 1.10 ± 0.01 and 36.46 ± 0.70 μM when compared with the standard inhibitor acarbose having IC₅₀ value 39.45 ± 0.10 μM. The most potent derivative among the series is hydroxy analog **3** having IC₅₀ value 1.10 ± 0.01 μM, which is many folds better than that of standard acarbose. The structure-activity relationships (SAR) are mainly based upon on the substitution pattern of the phenyl part. Molecular docking studies were carried out to understand the binding interaction of the most active compounds.



Keywords: Synthesis, Coumarin, α -Glucosidase inhibitory potential, Molecular docking study, SAR

QUANTITATIVE PHYTOCHEMICAL INVESTIGATION AND ANTHELMINTIC ACTIVITY OF *PSOPHOCARPUS TETRAGONOLOBUS*

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Abstract

Medicinal plants are the preferred option for the treatment of many human diseases including internal helminthic infections. Medicinal plants are better choice to treat helminthic infections because they do not exhibit most limitations observed using modern anthelmintic drugs such as multidrug resistance issues and their corresponding side effects. *Psophocarpus tetragonolobus*, commonly known as winged bean, is a type of legume found in tropical countries such as Malaysia. The present study was aimed to investigate the phytochemicals constituents quantitatively and to assess the anthelmintic activity of various extracts of *P. tetragonolobus* against the earthworm, *Pheretima posthuma*. Adult *P. posthuma* was used as a model to represent parasitic nematodes and trematodes due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings. Methanol and water extracts of fresh and dried *P. tetragonolobus* were obtained using cold maceration method. The concentrated crude extracts were subjected to preliminary phytochemical screening to identify the presence of phytoconstituents and the total phenolic content was determined quantitatively using the Folin-Ciocalteu method. The preliminary screening showed the presence of carbohydrates, proteins, volatile oils, tannins and phenolic phytochemicals. The anthelmintic activity of various extracts of *P. tetragonolobus* at two different concentrations (50 and 100 mg/ml) was assessed against the earth worm, *P. posthuma*. The anthelmintic activity was assessed by determining the time of paralysis (P) and time of death (D) of *P. posthuma*. At the concentration of 100 mg/ml both the methanol and the water extracts of *P. tetragonolobus* displayed non-significant difference ($p > 0.05$) in anthelmintic activity when compared with standard drug, mebendazole (50 mg/ml). In conclusion, *P. tetragonolobus* exhibits significant anthelmintic property which may be due to the presence of tannins as tannins has been associated with their anthelmintic activities.

Keywords: *Psophocarpus tetragonolobus*, winged beans, anthelmintic, total tannin content

F8268-A3-INDUCED ANTI-ANGIOGENICITY IS MEDIATED, IN PART, THROUGH DOWNREGULATION OF VASCULAR ENDOTHELIAL GROWTH FACTOR AND UPREGULATION OF THROMBOSPONDIN

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Abstract

Chemotherapy, which is one of the mainstay of breast cancer treatments, is often compromised by undesirable side effects and cancer resistance. New/ novel anti-cancer agents with optimal therapeutic effect and minimal toxicity are thus desirable. The novel peptide F8268-A3 (patent = US2011/0201642A1), was isolated from the endophytic fungus, *Aspergillus sclerotiorum* strain HAB10R12. Preliminary study found F8268-A3 to down-regulate pro-angiogenic factors that share certain components along VEGF signaling pathway. This study was undertaken to unveil molecular events underlying the potential anti-angiogenic effect of F8268-A3. The 24-hour differential cytotoxicity of F8268-A3 against MCF7 (ER positive) and MDA468 (ER negative) human breast cancer cell lines as well as human umbilical vein endothelial cells (HUVEC) was assessed using the SRB assay. The anti-angiogenicity of F8268-A3 was then examined using the Tube Formation Assay. Immunocytostaining for VEGF and TSP-1 in treated breast cancer cells was also performed. F8268-A3-induced anti-angiogenicity in vitro was validated using xenograft nu/nu nude mouse model (male; 9 months-old; n=6/ group) bearing MDA468 tumour. Present findings showed that F8268-A3 inhibited tube formation by HUVEC (67.3%) even at subtoxic dose (0.1 µM). Immunocytostaining indicated that F8268-A3 was more selective in down-regulating VEGF in MDA468 (33%) as opposed to MCF7 (15.35%). The anti-angiogenicity was also accompanied by up-regulation of TSP-1 (34.88%) in breast cancer cells. For in vivo study, high (15 mg/kg) and low (1.5 mg/kg) dose F8268-A3 reduced tumour volume and weight by > 20% and > 22%, respectively when compared to the control group. Subsequent immunohistostaining showed down-regulation of VEGF (< 69.07%) and up-regulation of TSP-1 (> 77.78%) F8268-A3 exhibited promising potential as a new anti-angiogenic agent. The anti-angiogenic effect could be mediated through interruption of the angiogenic switch that involved suppression of VEGF and increased expression of TSP-1.

Keywords :Anti-angiogenicity, breast cancer cells, endophytic fungus, VEGF and TSP-1

SYNTHESIS AND EVALUATION OF SINENSETIN AS A POTENTIAL ANTI-INFLAMMATORY AND ANTI-ANGIOGENESIS AGENT

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Abstract

Inflammatory conditions such as rheumatoid arthritis (RA) are still in needs of an effective treatment that can cater for less developed societies. The major flavone constituent of the plant, sinensetin, was claimed to be responsible for the bioactivity of *Orthosiphon-stamineus*. This study aimed at verifying the sole contribution of sinensetin to the pharmacological activity of the plant, particularly its anti-inflammatory and anti-angiogenesis activities. The approaches used are threefold. First, a synthetic methodology was developed to supply sufficient quantity of sinensetin for subsequent biological evaluations. All reaction steps gave satisfactory yields (80 to 90%) except for the final cyclization step. Despite the poor yield (36.2%) of the final step, sufficient amount (1.0 gram) of sinensetin was produced. The structure of the product was verified by spectroscopic methods. Secondly, the prepared sinensetin was evaluated for its anti-inflammatory property in the carrageenan-induced paw edema model in Swiss albino mice. The experiments were carried out to test two administration routes of the compound namely: intraperitoneal and oral delivery. The course of the edema was followed at the 1st, 3rd and 5th hour after carrageenan injection. Intraperitoneal sinensetin given at 25 and 50 mg/kg showed efficacy at the later hours of the experiment while this delayed effect was overcome by a higher dose (100mg/kg) with a significant edema reduction of 51% at the 5th hour. Orally given sinensetin at the highest dose significantly reduced the edema by about 30% after 5 hours. The bioavailability of sinensetin was confirmed by measuring the plasma levels of sinensetin in the orally treated mice using quantitative LC-MS which showed the low concentrations of sinensetin (0.025 mg/mL) at higher dose. Third, sinensetin was evaluated for its anti-angiogenesis activity (relevant to RA) using the rat aorta ring assay. Sinensetin significantly inhibited the growth of blood vessels from the rat aorta at concentrations of 60 to 100 μ M. This concentration range was non-toxic to the endothelial cells *EA.hy926*. Mechanistically, sinensetin was shown to inhibit the steps of vessel formation such as tube formation, cell migration, and colony formation of the *EA.hy926*. Taken together, the present data confirms the contribution of sinensetin as the bioactive component in *O. stamineus* in giving its anti-inflammatory and anti-angiogenic activities, providing further support in its development as a potential phytopharmaceutical substance with application in inflammatory diseases such as RA. The successful synthesis of sinensetin may increase its accessibility for this development.

Keywords : Sinensetin, Carrageenan, Hind-paw oedema, Ring aorta assay

DEVELOPMENT OF ACUTE TOXICITY TEST OF SELF NANOEMULSIFYING DRUG DELIVERY SYSTEM (SNEDDS) FOR ANT NEST EXTRACT (*Myrmecondia pendans*)**MUHAMAD IQDAM ANSHORY^{1*}, ENIZA ANGGRAINI¹, TIRTA AJI PERMANA¹, FARIDA HAYATI¹, YANDI SYUKRI¹**¹ Department of Pharmacy Practice, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, Jl. Kaliurang Km.14,5, Sleman, Yogyakarta, +62274898444, Indonesia. Email: iqdmanshory997@gmail.com**Abstract**

Ant nest (*Myrmecondia pendans*) is a native Indonesian plant that is often used as a traditional medicine. Ant nest is rich in flavonoids and tannins where these compounds are found to be antioxidants, so efficacious as anti-cancer. To enhance the bioavailability of Ant nest extract, SNEDDS formula was developed. Due to limited information and scientific publication on the plants, Ant nest products still have been distributed at market acute toxicity test of Ant nest extract should be conducted. The aim of this study was to develop the determination of the toxicity of SNEDDS Ant nest extract formula. SNEDDS contained 1600 mg Ant nest extracts in 10 ml of oil phase made by capryol, propylene glycol, tween 80 with ratio 1:3:6. Acute toxicity test in zebrafish using 80 fish was divided by seven groups, with five concentration groups of 100 mg, 166 mg, 256 mg, 409.6 mg, and 655.36 mg, one solvent group, and one normal group. The fish exposed to the test chemical for a period of 96 hours with observation every 24 hours. SNEDDS evaluation results obtained the particle size of 88 nm, the polydispersity index of $0,178 \pm 0,05$, and zeta potential of $-0,34,3 \pm 0,46$ mV. Stability test of centrifuge test showed that SNEDDS is stable, and a result of freeze-thaw cycle showing good stability as suitable in polydispersity index and zeta potential. The result for 96 hours, acute toxicity test in zebrafish showed there was no LC50 value because there was no number of death in all treatment groups. Overall, the study can be concluded that SNEDDS is not toxic in zebrafish.

Keywords: *Myrmecondia pendans*, SNEDDS, Acute toxicity test, zebrafish

PHYTOCHEMICAL SCREENING AND EVALUATION OF ANTI-INFLAMMATORY ACTIVITY OF SWIETENIA MACROPHYLLA SEEDS**V.V.S.S. APPALA RAJU^{1*}, NAHLAH ELKUDSSIAH BINTI ISMAIL², AUN KHAI LE****^{1*} Department of Medicinal chemistry, Faculty of Pharmacy, MAHSA University, Malaysia. ² Deputy Dean, Faculty of Pharmacy, MAHSA University, Malaysia. Email: saiappala@mahsa.edu.my****Abstract**

Swietenia macrophylla is one of the most important species in *Swietenia* genus and reported that all the parts of plant have wide range of therapeutics uses and to treat diabetes in the indigenous system of medicine. However, there were limited scientific data on its therapeutic applications of *Swietenia macrophylla* seeds and hence an attempt has been made to study the anti-inflammatory activity of different organic extracts of *Swietenia macrophylla* seeds and evaluated the preliminary phytochemical study. The seed extracts were prepared using different organic solvents in the order of increasing polarity (petroleum ether, acetone and distilled water) by using soxhlet apparatus. The anti-inflammatory activity of all the *Swietenia macrophylla* seeds extracts were evaluated at a dose level of [200 mg/kg (bw)], orally by using Carrageenan induced paw oedema method using Indomethacin [10 mg/kg (bw)] as standard compound. All the data was statistically analysed by using one-way ANOVA. The preliminary phytochemical results showed the presence of sterols in petroleum ether extracts and presence of flavonoids, alkaloids, tannins, terpenoids and saponins in the aqueous extract. From the results of the anti-inflammatory activity study, aqueous extract of *Swietenia macrophylla* seeds exhibited superior in its anti-inflammatory activity when compared to other organic extracts and the inflammation was decreased significantly in the fourth and fifth hour after administration of carrageenan. Anti-edematous action of aqueous extracts may be due to the presence of flavonoids, which are postulated to act by impeding arachidonic acid metabolism and production of reactive free radicals. Overall, the different organic extracts of *Swietenia macrophylla* seeds were able to abate some degree of inflammation.

Key words: *Swietenia macrophylla*, soxhlet, carrageenan, anti-inflammatory.

OPTIMISATION OF OINTMENT BASE FORMULA OF SOURSOP LEAF (*Annona muricata L*) ETHANOL EXTRACT TO ULCER CAUSING BACTERIA (*Staphylococcus aureus*) USING SIMPLEX LATTICE DESIGN METHOD

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Abstract

Soursop leaf (*Annona muricata L*) has been known to have an active component of phenol compounds. Flavonoids that have antioxidant and antibacterial activities. Ulcers or furunkel is a skin disease caused by bacteria. The objective of this research is to optimize the formula of soursop leaf extract and its action on the bacteria that causes ulcers (*Staphylococcus aureus*) using simplex lattice design optimization method. The extraction process was carried out by maseration method with 70% ethanol as a solvent. Then the obtained extract was formulated into an ointment at 25% concentration. Three different ointment formula was used and compared as the base F1 (Vaselin 7,5g); F2 (Vaselin 3,75g and Adeps Lanae 3,75g) and F3 (Adeps Lanae 7,5g). The resulting ointment was tested for its physical properties and antibacterial activity. The physical property tests consist of spreading, stickiness, pH and viscosity tests. Then the test results from the physical properties and antibacterial activity obtained was inserted into equations using Simplex Lattice Design method. The optimum formula equation was obtained from the highest total response result is formula 1, containing vaseline album and adeps lanae at a ratio of 100%: 0% (Vaselin 7,5g).

Keywords: Soursop leaf, *Annona muricata L*, *Staphylococcus aureus*, Ointment, Simplex Lattice Design

KETAMINE HYDROCHLORIDE AS INTRANASAL ANAESTHESIA IN PET BIRDS**VELLAYAN SUBRAMANIAM AND NUR ANIS AB. HALIM****Department of Pharmacology and Chemistry, Faculty of Pharmacy, UiTM Selangor, 42300 Puncak Alam, Kuala Selangor, Selangor.****Abstract**

Parenteral anaesthesia is an administration of anaesthesia by injection either intravenously, intramuscularly or intraperitoneally. Mortality rate due to parenteral anaesthesia in pet birds is high. Intranasal anaesthesia is a newly developed anaesthesia technique, where a drug is administered through the nasal route to overcome stress and mortality due to painful parenteral anaesthesia. Nasal anaesthesia is not practised in Malaysia for birds. This study investigates the effectiveness and recovery rate of intranasal anaesthesia in pet birds. Ketamine hydrochloride was administered as nasal drops with starting dose of 10 mg. Thirty pet birds were studied. Fifteen of them are prospective data for intranasal anaesthesia, and another fifteen are retrospective parenteral data from previous records. Data were analysed by SPSS 20 using independent T-test. The success of delivery was 100 % with intranasal anaesthesia. No death was recorded. In parenteral anaesthesia, 86.67 % was successful in the administration of the drug, and 13.33 % had complications which led to death. The onset of action for intranasal anaesthesia was slower than parenteral anaesthesia. This is because 100 % of parenteral anaesthesia is delivered into the body system while some of the nasal drops used for intranasal anaesthesia runoff from nostrils or flow into the throat. The recovery rate in birds using intranasal anaesthesia is faster than parenteral anaesthesia. The birds were subjected to less stress and trauma, thus need less time to recover. Recovery rate is better in intranasal anaesthesia as compared to parenteral anaesthesia. Hundred percent of the subjects by intranasal anaesthesia had a normal recovery when compared to parenteral anaesthesia. In conclusion, ketamine hydrochloride used as intranasal anaesthesia in pet birds is as effective as parenteral anaesthesia. Intranasal anaesthesia shows excellent recovery in pet birds and reduces the mortality.

FORMULATION OF NANOPARTICLE OF SERUM ETHANOLIC FRACTION OF STEM (*Jatropha multifida* Linn.) WITH GELATION IONIC METHOD**RISCKY GUSLINDAYANI^{1A}, YANDI SYUKRI^{1B}, ANNISA FITRIA^{1C}***¹Department of Pharmacy, Faculty of Math and Science, Universiti Islam Indonesia (UII), Sleman, Yogyakarta, Indonesia

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Abstract

Jatropha multifida Linn. is a plant that is empirically used in the treatment of wounds, especially the sap and leaves. Preparation and use of serum nanoparticle preparations containing *Jatropha multifida* Linn has the potential to improve therapeutic effectiveness. One of the methods used in the manufacture of nanoparticles is the ionic gelation method. This study aims to formulate and characterize serum nanoparticles of an ethanolic fraction of *Jatropha multifida* Linn. with ionic gelation method. *Jatropha multifida* linear powder Linn. in extraction with the method of soxhletasi stratified than in fractionation to get an ethanolic fraction. The fractionation results are prepared in the form of nanoparticles subsequently characterized by Particle Size Analyzer (PSA) and Scanning Electron Microscopy (SEM), then formulated in a serum preparation. The evaluation of the serum preparation was performed through organoleptic tests, and stability serum. Nanoparticle formulation of the ethanolic fraction of *Jatropha multifida* Linn. with ionic gelation method showed that nanoparticle size ± 215.0 nm; PDI ± 0.415 ; and potential zeta value ± -30.0 mV. The characterization results show that the nanoparticles were successfully constructed. In the 4-week stability test results can be a stable result of color, odor, homogeneity, and pH. In the test cycling test, the resulting serum preparation is stable, the crystal does not form, and does not undergo syneresis. It can be concluded that the preparation of serum nanoparticles of formula 3 with a concentration of 30% glycerine is the best preparation.

Keywords: Serum nanoparticles, ethanolic fractions, *Jatropha multifida* Linn., ionic gelation method

GOLD NANOPARTICLES ACTIVITY FROM BIOSYNTHESIS OF *Manihot glaziovii* MULL. ARG EXTRACT AGAINST *Pseudomonas aeruginosa* BIOFILM**IKA PUTRI SYAWALIANI^{1*}, ZHAFRAN KHALISH¹, TESHA PARAMITHA¹, BAMBANG HERNAWAN NUGROHO¹, ANNISA FITRIA¹**¹Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, Jl Kaliurang km 14,5 Yogyakarta, +62274898444, Indonesia. Email: ikasyawaliani@gmail.com**Abstract**

Nosocomial infection is a hospital acquired infection often caused by *Pseudomonas aeruginosa*. *Pseudomonas aeruginosa* has the ability to form biofilms so that *Pseudomonas aeruginosa* became one of the bacteria that caused resistance to antibiotics. One of the solutions for this infection problem is to use metal nanoparticles, such as silver and gold. Biosynthesis of gold nanoparticles is widely developed because it is environmentally friendly and easy method. Besides that, gold also has stable chemical properties and low toxicity. The aim of this research is to discover the activity of gold nanoparticles from biosynthesis of leaf *Manihot glaziovii* extract against biofilm activity of *Pseudomonas aeruginosa*. The gold nanoparticles characterization was performed by spectrophotometer and particle size analyzer. Determination of MIC is done by microdilution method. Gold nanoparticles activity against *Pseudomonas aeruginosa* was done by looking at the percentage of destruction *Pseudomonas aeruginosa* biofilm. Destruction of biofilm was done by microtiter plate assay method by staining using crystal violet. In this Research, The best formula of gold nanoparticles is formula 6 (1000 μ l extract and 600 μ l HAuCl₄) with wavelength 548nm, particle size 62.13 \pm 0.15 and polydispersity index value 0.24 \pm 0.02. The gold nanoparticles showed inhibitory activity against *Pseudomonas aeruginosa* with minimal 25% of concentration. Gold nanoparticles of *Manihot glaziovii* extract proved to have activity against biofilm *Pseudomonas aeruginosa* especially the destruction of biofilm with percentage destruction 60.15 % with 25% (v/v) concentration of gold nanoparticles; at gold nanoparticles concentration 12,5%(v/v) showed percentage of biofilm *Pseudomonas aeruginosa* is 48,24% while at gold nanoparticles concentration 6,25%(v/v) showed percent destruction of biofilm that is 45,02%. The value of IC₅₀ obtained by 13.20%, it show that with a concentration of 13.20% gold nanoparticles using *Manihot glaziovii* extract can destroy 50% of biofilm *Pseudomonas aeruginosa*

Keyword: Gold nanoparticles, *Manihot glaziovii*, *Pseudomonas aeruginosa*, antibiofilm activity, crystal violet

CYTOTOXIC ACTIVITY OF GOLD NANOPARTICLES CASSAVA LEAF EXTRACT (*Manihot esculenta* Crantz.) ON CERVICAL CANCER CELL (HeLa CELL)**BETA BARASILA NIRMA HANDALIS^{1*}, HAFIZH PRASETYO¹, LAKSMANA ADI PUTRA¹, BAMBANG HERNAWAN NUGROHO¹****¹Faculty of Math and Science, Departement of Pharmacy, Universitas Islam Indonesia, Jl Kaliurang km 14,5 Yogyakarta Indonesia.
Email: nirmabarasila@gmail.com****Abstract**

Nanoparticle is a particle formulations that are dispersed at a nanometer size or per thousand microns. Gold nanoparticles are widely used in the medical field because they are non-toxic and not easy to oxidize. Usage of plant extract as bioreductors has become an alternative in the synthesis of gold nanoparticles. This research aims to examine the cytotoxic activity of gold nanoparticles cassava leaf extract (*Manihot esculenta* Crantz) against cervical cancer cells (HeLa). The content of flavonoids contained in cassava leaves has a role as a reducing agent and stabilizer in the synthesis of gold nanoparticles. Characterization of gold nanoparticles includes visual observation of color changes, time of gold nanoparticles using the UV-Vis spectrophotometer, particle size was obtained by PSA, the morphology using SEM and TEM, while the functional group was obtained by using FTIR. Results of this study showed that the best formula is formula 20. The characteristics were a clear yellowish color change to pink, an absorption wavelength of 534 nm, a particle size of 74 nm, PDI value of 0,373 \bar{D} , and a triangle morphology. Out of the 40 formulas with 4 concentrations of extracts (5%, 10%, 15% and 25%), one best formula was obtained in formula 20 with leaf extract concentration of 10% (1000 μ l cassava leaf extract, 1000 μ l HAuCl₄). In formula 20, MTT assay was performed using concentrations of gold nanoparticles cassava leaves extract of 50%, 25%, 12.5%, 6.25%, 3.125%, 1.562%, and 0.781%. The result of cytotoxic test on HeLa cell has obtained a value of Inhibition Concentration (IC₅₀) on gold nanoparticles cassava leaf extract of 35,3047% and IC₅₀ on cassava leaf extract is 83,7643%. Based on the IC₅₀ value, it can be concluded that preparation of gold nanoparticles cassava leaf extract can increase cytotoxic activity against cervical cancer cell (HeLa).

Keywords: Gold Nanoparticles, Cassava leaf, HeLa cell, MTT assay.

THE ACTIVITY OF NANOGOLD USING *MANIHOT ESCULENTA* CRANTZ. EXTRACTS BIOSYNTHESIS AGAINST *ESCHERICHIA COLI* BIOFILMS

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Abstract

Biofilm formation is one of the main problems that can cause infectious diseases. *Escherichia coli* biofilm is known as the main agent causing urinary tract infection. Nanogold has become the newest solution to overcome the formation of *E.coli* biofilm because it can be applied in the development of anti-biofilm strategy with small particle size and non-toxic, so it does not have harmful effects to the body. The use of physical or chemical methods in the synthesis of nanoparticles has a toxic effect, thus the biosynthesis using plants is used to overcome this problem. Cassava leaves contain flavonoids that act as a bioreductor as well as an antibacterial agent. This research aims to find out on nanogold activity of *Manihot esculenta* crantz extract towards *E.coli* biofilms. Biosynthesis of nanogold was done using 10% of cassava leaf extract with HAuCl_4 variation. We tested the destruction of biofilm using violet crystals. Nanogold of extract *Manihot esculenta* Crantz. has a percentage destruction on *E.coli* biofilm of $79,07 \pm 4,03$ at a concentration of 50 μl nanogold. Biofilm destruction activity test obtained an IC_{50} value of 12,3 μl . It can be concluded that nanogold extract *Manihot esculenta* Crantz. has a high percentage of *E.coli* biofilm destruction.

Keywords: Biofilms, Nanogold, *Manihot esculenta* Crantz

DEVELOPMENT AND EVALUATION OF METOPROLOL TARTRATE BUCCOADHESIVE BILAYERED TABLET: *EX-VIVO* STUDIES

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Abstract

Bioadhesive buccal delivery of drugs is one of the alternatives to the oral route of drug administration, particularly to those drugs that undergo first-pass metabolism. Metoprolol tartrate lowers high blood pressure, controls chest pain, helps treat heart failure and heart attack. The present work was performed to develop and evaluate buccal tablet containing metoprolol tartrate. The metoprolol tartrate buccoadhesive tablets were developed by direct compression method using different ratios of polymers such as HPMC E15, PVP K30 and hydroxypropyl cellulose. Ethyl cellulose was used as backing layer of the tablet. All physicochemical parameters such as thickness, hardness, weight variation and drug uniformity were investigated. The tablet formulations were also subjected to evaluation of drug release in phosphate buffer of pH 6.8. *Ex vivo* studies on bioadhesion, residence time and permeation of the buccoadhesive tablets through freshly cut porcine buccal mucosa membrane were evaluated. *Ex-vivo* residence time of all the prepared metoprolol tartrate tablets showed values between 6.64 ± 0.92 to 7.12 ± 0.03 . Mucoadhesive strength, force of adhesion and bond strengths of the buccal tablets were found to be within the bioadhesive range and was comparable with other GRAS (generally regarded as safe) category polymers studied. A contact time of 4 minutes was used to achieve optimal bucco adhesive strength. The permeation study showed that drug release of more than 80% was achieved at the end of the 5th hour. In conclusion, the present buccal metoprolol tartrate tablet formulations can be suitably developed as an alternative to conventional dosage forms with an added advantage of circumventing the hepatic first pass metabolism.

Keywords: Buccal tablet, Metoprolol Tartrate, *ex-vivo* bioadhesion, *ex-vivo* permeation, *ex-vivo* residence.

ANDROGRAPHOLIDE PERMEATION STUDY THROUGH STRAT-M MEMBRANE USING OLEIC ACID AND PROPYLENE GLYCOL AS THE ENHANCERS**HANI'ATUL KHARIMAH*, OKTAVIA INDRATI, BAMBANG HERNAWAN NUGROHO, PRIMA AULIA PUTRA, SHERINA PUTRI AL-HAKIM****Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, Yogyakarta, Indonesia.
Email:kharimah11@gmail.com****Abstract**

Andrographolide is a major bioactive component of the medicinal plant of sambiloto (*Andrographis paniculata* (Burm. F.) Nees) which has many properties such as anti-inflammatory and anti-diabetic properties. Andrographolide is lipophilic with log P value $2,632 \pm 0,135$, the molecular weight of 350,455 g/ and has a low bioavailability (2,67%). It was indicates that andrographolide possible to be delivered by transdermal route to improve the effectiveness of a drug. Enhancer substance is needed to improve the permeation of andrographolide by increase the permeability of skin barrier. Enhancers that can be used are oleic acid and propylene glycol. This study aims to determine the effect of oleic acid and propylene glycol as the enhancers to andrographolide permeation through Strat-M membrane and also to determine the kinetics of transport of andrographolide using the WinSAAM software. The research was conducted by making andrographolide solution of 3 mg/ml with a variation of oleic acid and propylene glycol. The ratio of oleic acid and propylene glycol (%w/w) in Formula 1 is 5%: 35%, Formula 2 is 10%: 30%, Formula 3 is 15%: 25%, Formula 4 only used 15% oleic acid, Formula 5 only used propylene glycol 40% and Formula 6 without the addition of enhancers. The permeation study was performed using a Strat-M membrane on a vertical Franz diffusion cell. Determination of permeated andrographolide was conducted using HPLC with methanol and water phase (67:33) v/v at 224 nm wavelength. Data was analyzed using WinSAAM software. The results showed that Formulation 5 which only used propylene glycol as enhancer, had the highest cumulative amount of andrographolide release and also had the highest flux value compared to the other formulations. The prediction results using WinSAAM show that andrographolide has three compartment models that follow the first order of drug release.

Keywords :andrographolide, permeation, oleic acid, propylene glycol, Strat-M membrane.

A QUANTITATIVE INSIGHT ON PRECLINICAL AND CLINICAL MEDICAL STUDENTS TOWARD ADVERSE DRUG REPORTING

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Abstract

In Malaysia, the Malaysian Adverse Drug Reaction Advisory Committee (MADRAC) has expanded its pharmacovigilance efforts in various ways in an attempt to reduce ADRs incidents and the associated costs. The activities of MADRAC are coordinated by the Uppsala Monitoring Centre as per the guidelines prescribed by the World Health Organization. Despite the existence of such drug safety monitoring systems, several studies revealed that the under-reporting phenomenon as being due to uncertainty about the drug causing an ADR, difficulty in accessing or compiling the reporting forms and a lack of knowledge of the aim and clinical utility of pharmacovigilance among health professionals. Hence this study was conducted to investigate the knowledge of medical students and their perception on adverse drug reaction (ADR) reporting. A cross sectional study was done on clinical or preclinical medical students using questionnaire during their coursework. There were differences between the two groups in responses relating to adverse drug reaction reporting (preclinical 3.3 vs clinical 3.7; $P < 0.01$) and reasons for not reporting a suspected adverse drug reaction (preclinical 3.4 vs clinical 3.8; $P = 0.001$). Medical students from clinical years had higher knowledge on ADR reporting. The perception on ADR reporting by clinical year students was significantly high.

Keywords: Medical students, Malaysia, pharmacovigilance, adverse drug reaction

A QUALITATIVE STUDY ON COMMUNITY PHARMACISTS' PERCEPTIONS AND EXPERIENCES TOWARDS VALUES, ETHICS AND DECISION-MAKING

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Abstract

Community pharmacists are the principal available health care professionals to people in India to meet any health related issues. They undertake remarkable measures in giving better and revitalized health information to the consumers in India. They are more concentrating on patient care as opposed to concentrating on therapeutic items. India is one of the leaders in health care among developing nations, whereby community practice and pharmaceutical care is commanding in community pharmacy. However, many community pharmacists in India do not seem to give a lot of thought to their own particular conduct whether it is related to individual responsibility or business related unless there are irreplaceable conditions. Hence, a qualitative study was conducted on community pharmacists to explore their perceptions and experiences towards values, ethics and decision-making. The results suggested that community pharmacists are not much bothered about the patient's health though some of the pharmacists take it as a significant factor in ethical decision-making. It is disappointing that community pharmacists emphasize more on physician's order or request than patient's health interests. It is also not surprising that most of the community pharmacists work towards their sales target instead of working towards patients' health care. It was good to know that the community pharmacists may give attention to certain factors while considering an ethical issue, though a very few pharmacists bother about their patient's health. Occasionally community pharmacists were ready to breach the rules for the patients' interest, but in most cases they represented as per the rules and regulations even though it was not certainly in the best option for the patients/customers which is a key aspect in ethical decision-making.

Keywords: Community pharmacy, ethics, decision-making, India, pharmacy values

A DESCRIPTIVE STUDY ON COMMUNITY PHARMACISTS' PERCEPTIONS TOWARDS VALUES, ETHICS AND DECISION-MAKING

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Abstract

India is one of the leaders in health care among developing nations, whereby community practice and pharmaceutical care is commanding in community pharmacy. However, many community pharmacists in India do not seem to give a lot of thought to their own particular conduct whether it's related to individual responsibility or business related unless there are irreplaceable conditions. Hence, a cross sectional study was conducted on community pharmacists to determine their perceptions towards values, ethics and decision-making. The participants were recruited using a multi-stage cluster random sampling. Frequencies and percentages were presented by using descriptive analyses. The normality of the data was verified by using Kolmogorov-Smirnov test and the significant value were below 0.05 suggesting violations of the assumption of normality. Of the 1057 community pharmacists approached to participate in this study, 742 responded by completing the questionnaire. The response rate in this study is 70.19%. The average age of the respondents was around 35 years (35.23 ± 8.68). The average work experience of the respondents was around 13 years (13.54 ± 8.49). The majority were male ($n=486, 65.49\%$). Diploma holders were 79.11% ($n=587$) whereas, 20.88% ($n=155$) were degree holders. About 58% ($n=437$) of the respondents experienced ethical dilemma situations once a week. The current study findings revealed that the pharmacists are facing ethical dilemma at their workplace most of the time.

Keywords: Community pharmacy, ethics, decision-making, India, pharmacy values

THE ASSOCIATION OF ANTICHOLINERGIC DRUGS BURDEN AMONG ELDERLY WITH PARKINSON'S DISEASE ON NON-MOTOR SYMPTOMS

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Abstract

Anticholinergic load amongst elderly may increase the risk of adverse events including falls, delirium and cognitive impairment. However, data on anticholinergic burden are limited in subpopulations, such as in Parkinson's disease (PD) and the occurrence of non-motor symptoms (NMS) among PD populations has markedly increased. The objective of this study was to determine whether the anticholinergic burden was associated with non-motor symptoms in elderly Parkinson patients. We retrospectively retrieved patient's data from the hospital medical record in the Parkinson Clinic between 2016 until 2017. There were 65 patients who satisfied the inclusion standards. Anticholinergic burden was measured using the Duran list and computed using the Anticholinergic Risk Scale (ARS). Prevalence of exposure to anticholinergic medicines was 61.5%, with 15.4% were prescribed at least 1 medication with anticholinergic property, and levodopa (84.6%) and trihexlphenidyl (69.2%) were the highest. Findings showed that duration of PD is the strongest predictor of anticholinergic burden ($p=0.019$). The ARS score of more than 4 is more likely to develop adverse events, and the commonly reported NMS were constipation (44.6%), neuropsychiatric (56.9%) and falls (24.6%). Multivariate regression analysis showed that ARS is associated with falls (OR 1.33; $p = 0.739$). Drugs with anticholinergic properties identified by ARS are associated with adverse events and non-motor symptoms.

Keywords: Anticholinergic, Parkinson's Disease, elderly, ARS score, anticholinergic burden

A RANDOMISED CLINICAL TRIAL FOR HOME MEDICATION REVIEW BY COMMUNITY PHARMACISTS (HMR-CP) AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS (T2DM)

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Abstract

The prevalence of Type 2 Diabetes Mellitus (T2DM) is globally rising at alarming rate. Home medication review conducted by community pharmacists (HMR-CP), is a comprehensive clinical review of a patient's medicines at their home by an accredited community pharmacist upon referral from the patient's Family Medicine Specialist (FMS) or Medical Officer (MO). A well-designed randomised clinical trial is needed to determine the economic and clinical impacts of HMR-CP. Accordingly, this study aims to develop and evaluate HMR-CP programme in optimising diabetes care in Malaysia. The clinical outcomes, humanistic outcomes, cost-effectiveness will be evaluated and the stakeholders' perception will be explored. A total of 166 patients with T2DM from Bandar Pasir Mas Health Clinic (BPMHC) will be randomly assigned into intervention group and controlled group. The primary outcome is the reduction in HbA1c percentage. Four secondary outcomes will be measured: clinical parameters, medication / medical related issues, medication adherence and wastage of medication. This study was divided into 5 stages: pre-intervention, training the community pharmacists, pilot study and interventional phase, economic evaluation and qualitative review from stakeholders. The stage 1 and 2 have been completed and the stage 3 is in the process. During stage 1, the manual and procedure of HMR-CP had been developed and validated. For the stage 2, the community pharmacists have been trained on using the forms related to HMR-CP, the management of T2DM by FMS, usage of drugs and insulin with device. Furthermore, the findings of the impact of HMR-CP through randomised clinical trial on patient's outcomes and payer perspective will also be presented. Such details may enhance the reproducibility of the programme in other community settings or disease management as it provides in-depth understanding of flow mechanism of HMR-CP and its intervention.

Keywords: Home medication review, community pharmacists, type 2 diabetes mellitus, economic evaluation, cost-effectiveness

ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE IN END STAGE RENAL DISEASE PATIENTS ON DIALYSIS IN HOSPITAL SERDANG

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Abstract

Chronic dialysis has a big impact on the patients' health-related quality of life (HRQOL) including decreasing physical functioning and social interaction, increasing risk of depression, causing muscle weakness, restless legs and post dialysis fatigue. This study was conducted to assess the health-related quality of life (HRQOL) in end stage renal disease (ESRD) patients on dialysis in Hospital Serdang. A cross-sectional survey was conducted among the Malaysian ESRD patients who are on haemodialysis (HD) or peritoneal dialysis (PD) in the Dialysis Unit of Hospital Serdang from July 2017 to September 2017. The patients were screened using convenient sampling according to the inclusion and exclusion criteria. The assessment was done by using the Malay and English version of Kidney Disease Quality of Life Short Form 36 (KDQOL-36) self-administered questionnaire. Sociodemographic, clinical and laboratory variables were obtained from e-His live system of Hospital Serdang. Out of 108 patients, 59 were males and the mean age was 48.15 ± 15.48 years old. The result showed that there was no significant difference in the mean score of all components of HRQOL in different types of dialysis. The demographic data which included age, gender, ethnicity, marital status, education level, occupation and monthly financial income did not significantly affect the HRQOL of dialysis patients. Patients with dialysis duration of more than 5 years had better HRQOL compared to other groups. Clinical parameters such as albumin and haemoglobin showed a significant correlation with the HRQOL of the dialysis patients. The HRQOL of ESRD patients on dialysis was impaired due to burden of the kidney disease. Counselling, education and regular monitoring using KDQOL-36 should be considered in improving the QOL among the dialysis patients.

Keywords: ESRD, dialysis, HRQOL, KDQOL-36

IMPACT OF WARD PHARMACISTS IN PREVENTING MEDICATION ERRORS IN MEDICAL WARDS OF A TERTIARY TEACHING HOSPITAL

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Abstract

Medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm. Any medication error that is identified and intervened before it reaches the patient is defined as near miss. The University Kebangsaan Malaysia Medical Center (UKMMC) employed electronic prescribing which was found to have reduced some but not all categories of medication errors. The study aimed to determine the rate of near misses intervened in medical wards by pharmacists. Six pharmacists were directly involved in patient's care in each six medical wards. Medication reconciliation and discharge screening were regularly performed to check on dose and frequency of the medications, duration of treatment, interaction, omission of medications and availability of drugs in formulary. Any discrepancies detected were clarified with the doctor-in-charge either face-to-face, via phone call or messaging application or subsequently recorded in a database. Throughout the year of 2017, 8146 patients have been monitored in medical wards. Total 900 near misses (1 error in every 9 patients) were intervened during patient's stay in the ward (69%, 621/900) and upon discharge (31%, 279/900). Majority of the near misses were found during transcribing stage (55%, 498/900), followed by prescribing stage (41%, 366/900), monitoring stage (2%, 22/900) and drug administration stage (2%, 14/900). Under transcribing stage, the top five most common type of near misses found were wrong dose (26%, 131/498), medication omission (22%, 110/498), wrong frequency (22%, 110/498), wrong drug (16%, 78/498), and wrong duration (5%, 25/498). In conclusion, medication errors can occur at all different stages of drug delivery process. Wrong dose and medication omission were the top two highest errors detected. Ward pharmacists' intervention is therefore important to reduce these medication errors and improve patient's safety in ward.

Keywords: near misses, medication error, ward pharmacists' intervention

KNOWLEDGE, ATTITUDES, AND PRACTICE OF PHARMACISTS AND DOCTORS TOWARD NUTRITION SUPPORT: HOSPITAL RAJA PEREMPUAN ZAINAB II BASED STUDY

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Abstract

Malnutrition is an acute or chronic state of nutrition in varying degrees of malnutrition with or without inflammatory activity led to a change in body composition and diminished function. Nutritional support plays an integral part in the treatment and has a number of clinical benefits. Insufficient education and knowledge about nutrition was identified as the second major barrier for proper nutritional care. This study was to evaluate the knowledge, attitudes and practices (KAP) toward nutrition support in Hospital Raja Perempuan Zainab II (HRPZ II) between healthcare providers. A cross-sectional study that surveyed doctors and pharmacists who were involved in nutritional support from October 2015 – January 2016 were conducted. A validated self-administered questionnaire was distributed to doctors and pharmacists through convenience sampling method. A total of 117 respondents (57 doctors; 60 pharmacists) from various grades completed the questionnaire with a response rate of 72%. 83 respondents were local graduates and 70.9% of respondents were less than 5 years in service. Pharmacists (93.3%) have a better knowledge than the doctors (80.7%) but this was not statistically significant. Local graduates have higher (85.5%) average knowledge compared to overseas graduate (67.6%). In addition, both pharmacists and doctors have ambivalent attitude toward nutrition support (46.7% vs. 52.6%). Significantly more doctors (91.2%) than pharmacists (70.0%) did screening patient's nutrition status on admission. Overall, both doctors and pharmacist showed average knowledge and ambivalence attitude toward nutrition support with good nutrition practice.

Keywords: Nutrition Support, malnutrition, NST

GROUP COUNSELLING ON SUBCUTANEOUS INJECTION TECHNIQUE POSTNATAL PROPHYLACTIC LOW MOLECULAR WEIGHT HEPARIN

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Abstract

In University Kebangsaan Malaysia Medical Centre (UKMMC), clinical pharmacists provide/deliver individualised medication counselling at bedside including device and injection technique of low molecular weight heparin [LMWH]. Each LMWH counselling session usually last for 20 minutes. In the effort of improving maternal health, thromboprophylaxis is currently considered for all postnatal caesarean patients who are at intermediate or high risk, according to the MDG 5: Improve Maternal Health. Since 2016, the demand of LMWH counselling has increased by 10-fold from average of 5 cases to 54 cases per month. However, there is no proportion increase in manpower. In order to ensure continuation of counselling services, group counselling is introduced with collaboration from the nursing and obstetrics and gynaecology (O&G) departments. A workflow and referral sheet were then developed. During working days, doctors from O&G wards (5 wards) will contact pharmacy and fill up a specific referral form. All referrals received are arranged for group counselling session at 3 pm on the same day, in a designated ward. During each session, the referral form will be reviewed by pharmacist for the dose and duration of LMWH prescribed for each patient. Patients will be then taught on self-administration technique, possible side effects and given information leaflet at the end of the session. Pharmacist will then document reviews in the individual referral form. In year 2017, a total of 216 group counselling sessions conducted were attended by 649 patients, giving an average of 3 patients per session, with an estimated total counselling duration of 72 hours. Compared to year 2016 there was a total of 465 session conducted individually with estimated total counselling duration of 155 hours. In the setting of limited manpower, group counselling enables us to meet the increasing demands of counselling services to increased number of patients in order to ensure patient compliance and safety with right administration technique.

Keywords: group counselling, subcutaneous LMWH injection technique, postnatal thromboprophylaxis

ANTIBIOTIC SELF-MEDICATION AMONG PHARMACY STUDENTS, HEALTH SCIENCE STUDENTS AND NON-MEDICAL STUDENTS IN UITM SELANGOR, PUNCAK ALAM KAMPUS

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Abstract

Antibiotic is a medication that is used to treat bacterial infection. The purpose of this study is to assess the knowledge on antibiotic medication and also the antibiotic self-medication behaviour among the students in UiTM Selangor, Puncak Alam Campus. A cross sectional study by using convenience sampling was conducted among undergraduate students from eight different faculties in UiTM Puncak Alam. A total of 430 questionnaires were distributed among the undergraduate students. The response rate was 81.4%. The questionnaire consisted of 30 items divided into 3 parts which were part A for demographic profile, part B for knowledge on antibiotic medication, the part C is for antibiotic self-medication behaviour. The data were analyzed by using Statistical Package for the Social Sciences (SPSS) version 21.0. Chi square test was used to determine the significant association between the tested parameters with p value less than 0.05. The response rate was 81.4%, with the majority of the respondents were female (80.7%). Most of them (88.1%) took antibiotics medications and 38.1% were self-medicated. The primary reason for self-medication was that they have antibiotics at home. Majority of the respondents stated that the choice of antibiotics was based on the previous doctor's prescription. Most took self-medicated antibiotics bought from community pharmacy. Most of them always verify the instructions come with the package and the majority never alter the dosage of antibiotics during the course of self-treatment. The study revealed that students have low knowledge on antibiotic medication. Although antibiotic is a drug that can only be obtained by prescription, there are still students who buy and get antibiotics from community pharmacies without any prescription. Action needs to be taken, to prevent serious problem from arising such as antibiotic resistance.

Keywords: Medication, bacterial infection, behaviour

SELF-MEDICATION PRACTICE AMONG STAFF IN UITM SELANGOR, PUNCAK ALAM CAMPUS**MUHAMMAD ANWAR NAWAB KHAN^{1*}, NOORSY AZWANIE¹**¹ Department of Pharmacy Practice, Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Selangor, Kampus Puncak Alam, Selangor, Malaysia. Email: anwarrkhan2003@yahoo.com**Abstract**

Self-medication is meant by resorting to one or more drugs in order to treat oneself without the authorized prescription. Self-medication is also defined as the choice and consumption of medicines by individuals to treat self-diagnosed symptoms. The study aimed to know the self-medication experiences among staff in UiTM Selangor, Puncak Alam Campus, and to find out the associations of knowledge and perception with the practice of self-medication. The research was conducted using questionnaires. The questionnaires consist of three parts, which comprises of questions to collect demographic data, self-medication experiences of target population, and the respondents' practice of self-medication. The response rate was 94.4%, with the majority of the respondents were female (83.0%), age between 51-65 (52.9%) and Malays. Most (73.9%) had self-medicated over the last one year. The majority of the respondents stated that pharmacist (57.7%) was the main source of information, followed by doctors (30.7%). Near half (49.7%) of the respondents read the information leaflet when taking medication that are not prescribed by doctors. The most common treated symptoms using over-the-counter medicine was headache, followed by cold, cough, sore throat, toothache, joint and muscle ache, stomach or digestion problem and skin diseases. About 45.5% respondents consulted doctors when symptoms were worsening and 11% consulted doctor when usual treatment was not effective. Qualification, gender and ethnic group were not the significant factors to the practice of self-medication. Most respondents were practicing a responsible self-medication way. To maintain a responsible practice of self-medication, healthcare professionals such as physicians and pharmacists must provide adequate and genuine awareness and information to patients to increase public health promotions. Besides that, as a person practicing self-medication, information about self-medication must be derived from a reliable source.

Keywords: Self-medication, prescription, consumption, symptoms, experiences

AWARENESS AND KNOWLEDGE ON EPILEPSY AMONG STUDENTS IN UiTM PUNCAK ALAM CAMPUS

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Abstract

Epilepsy is a disease when there are hyper-excitability of neuron and electrical storm forming in the brain. Epilepsy is most associated with stigma among the society and the patient often exposed to insult and humiliation due to lack of awareness and knowledge of epilepsy. This study is done in UiTM Puncak Alam to identify the level of awareness and knowledge of epilepsy among undergraduate students from seven different faculties. The questionnaire was divided into four part: demographic, awareness and previous experience of epilepsy, knowledge of epilepsy and knowledge of care during epileptic seizure. The questionnaires were distributed evenly between the seven faculty: faculty of pharmacy, faculty of health science, faculty of accountancy, faculty of business management, faculty of hotel and tourism management, faculty of art and design and faculty of education. The result was analyzed through the Statistical Package for the Social Sciences (SPSS) version 22.0 and Microsoft Excel. From the finding, majority of the students were Malay (95.7 %) and female (81.6 %) were higher compared to male (18.4 %) students. About 93.8 % of students never heard about epilepsy and only 7.6 % had attended a seminar or talk about epilepsy. Only 11.1 % of students have a family member who is diagnosed with epilepsy. In view of knowledge on epilepsy, only 26.2 % know the cause of epilepsy, 62.4 % didn't think epilepsy is a transmittable disease and 34.6 % did think epilepsy is heritable. Although 94.3 % of students agreed to keep away objects from patient experiencing an epileptic attack but only 7.3 % disagreed on putting something into the mouth of patient during seizure attack. In general, the level of awareness and knowledge among students in UiTM Puncak Alam was favourable.

Keywords: Epilepsy, awareness, knowledge

INFLUENCE OF PHARMACEUTICAL ADVERTISEMENT ON KNOWLEDGE AND MEDICATION USE AMONG STUDENTS IN UNIVERSITI TEKNOLOGI MARA, PUNCAK ALAM, MALAYSIA

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Abstract

Studies have shown that pharmaceutical advertisement has an important effect on the drug consuming behaviour of patients. Assessment of influence of pharmaceutical advertisement among UiTM students is important as this would help to enhance current teaching-learning process. The influence of pharmaceutical advertisement among students in Universiti Teknologi MARA (UiTM) however, remain unknown. The present study was undertaken to assess the influence of pharmaceutical advertisement on knowledge and medication use to students. A 57-item questionnaire consisted of six parts was administered to UiTM students from March to May 2017. Part A consisted of sociodemographic items while part B to F were validated questions to elicit knowledge and medication use. A total of 200 students completed the questionnaire whereby the majority were female (114/200,57%) and year 3 students (82/200,41%) from the health-related programmes (119/200, 59.5%). Data collected were entered and analysed using SPSS version 20. Based on the knowledge score, the majority scored fairly (119/200, 59.5%). Both positive and negative responses were obtained from students regarding pharmaceutical advertisements. However, students were not easily perceived by pharmaceutical advertisements and promotions and they still rely on advice from the healthcare professionals in order to select quality drugs for use. Pharmaceutical advertisements do not necessarily bring negative influence on knowledge and medication use. Learning objectives in teaching should emphasise on evidence-based medicine targeting towards the vulnerable group of students from the health-related programmes.

Keywords: Pharmaceutical advertisement, influence, knowledge, medication use

KNOWLEDGE, AWARENESS AND PRACTICE OF MEDICATION STORAGE**EZLINA USIR^{1*}, AMALINA ROSEDI**

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Abstract

Storing medications at home is a common practice due to many reasons. These include storing it for regular consumption, in case of emergencies, or storing leftover medicines. A proper storage location is vital to ensure the stability of the medicines. This study aimed to investigate the public knowledge, awareness and practice on medications storage. The instrument was adapted from Obitte *et al.*, 2009; See *et al.*, 2014; and Dawood *et al.*, 2017. The self-administered questionnaire consists of 28 items which covered demographic backgrounds (10 items), knowledge (8 items), awareness (2 items) and practice (8 items) on medication storage. Adults aged 18 and above who understands Malay or English in Kota Bharu, Kelantan were invited to participate in this study. Those who do not consume any medications or supplements were excluded from this study. Convenience sampling was adopted and participation was voluntary. Respondents were given 10 minutes to complete the questionnaire. The results were analysed using Statistical Package for the Social Sciences (SPSS) version 21.0. Most respondents answered correctly on the items of 'store in a cool place' label on the medications (71.9%), the needs to store certain medications in a refrigerator (80.1%), the damage heat and sunlight can cause to the medications (78.4%) and the suitability of the bathroom cabinet for storing medications (61.4%). Most respondents aware that there is a recommended storage for each dosage form (63.2%) and the effect on the location of storage to the medications potency (69.6%). Most of the medications were kept inside or top of cupboard for solid (60.0%), semisolid (63.2) while liquid medications were stored in the refrigerator (82.4%). Respondents were generally aware of the recommended medicine storage for each dosage forms and it influences on medicine potency. Most respondents kept medicines at appropriate locations.

Keywords: Medication storage, knowledge, awareness, practice

A CASE CONTROL STUDY ON THE CLINICAL CHARACTERISTICS AND RISK FACTORS OF ALLOPURINOL INDUCED CUTANEOUS REACTION IN HOSPITAL SULTANAH AMINAH JOHOR BAHRU

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Abstract

Allopurinol is a drug commonly used in long term gout prophylaxis in management of high plasma uric acid. Nevertheless, it is recognized as a high risk culprit drug in inducing adverse drug reaction (ADR). Allopurinol has accounted for 34% of all reported ADR in year 2014 as reported by National Pharmaceutical Control Bureau (NPCB), Malaysia. This study is to determine the clinical characteristics of allopurinol hypersensitivity reaction, to evaluate the rate of reaction of allopurinol hypersensitivity reaction and to identify the potential risk factors associated with allopurinol induced cutaneous reaction. A retrospective study involving 57 patients who were referred to Dermatology Clinic with allopurinol induced cutaneous reaction; whose demographic data and starting dose were studied and compared to 114 allopurinol tolerant (control: case ratio =2:1) between year 2005 to 2015. Clinical characteristic, rate of reaction and potential risk factor leading to the cutaneous reaction were investigated. The rate of cutaneous reaction was 2.28%. Median time from starting allopurinol to the occurrence of allopurinol induced cutaneous reaction was 27 days (range 1–120 days). Clinical characteristic of allopurinol cutaneous reaction includes fever, eosinophilia, elevated ALT and serum creatinine, manifestation of cutaneous reaction such as purpura, blister and mucosa involvement with different severity and mortality outcome. Logistic regression model was used to determine the association between potential risk factors including age, gender and ethnicity and the occurrence of allopurinol induced cutaneous adverse drug reaction. The logistic regression model was statistically significant, $\chi^2(4) = 30.77$, $df=5$, $p < .001$. The model explained 22.9% (Nagelkerke R^2) of the variance in allopurinol-related cutaneous reaction and correctly classified 70.8% of cases. The effect of gender is significant and positive, indicating males were 4.03 (CI:1.84-8.84) times more likely to have allopurinol cutaneous reaction than females. Increasing age was associated with a reduction in the likelihood of developing adverse cutaneous reaction. There is no statistical significant association between ethnicity and cutaneous reaction occurrence. Severe outcome of allopurinol cutaneous reaction suggests the need for monitoring of sign and symptoms of allopurinol hypersensitivity. It is advisable to discontinue allopurinol at the first appearance of skin rash or other signs that indicate an allergic reaction.

Keywords: Allopurinol, cutaneous reaction, hypersensitivity

THE IMPACT OF IMPLEMENTING ANTIMICROBIAL STEWARDSHIP PROGRAMME IN HOSPITAL QUEEN ELIZABETH II: A DESCRIPTIVE STUDY

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Abstract

Antimicrobial stewardship (AMS) is a coordinated program involved in monitoring the appropriate use of antimicrobial therapy. Primarily, the goal of AMS is to optimise clinical outcomes while minimising the unintended consequences of antimicrobial use. This will indirectly reduce health care costs without adversely affecting the quality of care. In Hospital Queen Elizabeth II (HQE II), the AMS was started since January 2016. This study evaluated the impact of AMS Program in HQE II by comparing: the antimicrobial consumption and cost for colistin, imipenem, ertapenem, meropenem, linezolid and vancomycin injection between Jan-Dec 2015 (Pre-AMS) and Jan-Dec 2016 (Post-AMS) and the number of antimicrobial resistance cases between that periods. This is an observational study that included all admitted patients into HQE II except paediatric ward and full paying patient ward. Defined Daily Dose (DDD) per 1000 patient formula was used to calculate the total usage of antimicrobials. The cost for the usage of antimicrobial was estimated according to the price list of HQE II inventory for 2017 and the cost metric that was used is cost per 1000 patients-days for specific antimicrobial. For general wards, there was a reduction in the antimicrobial consumption and the cost for all the antibiotics studied in 2016 compared to 2015. The DDD for colistin decreased from 10.365 to 2.74 ($p < 0.05$) and 40.905 to 20.925 ($p < 0.05$) for meropenem. Meanwhile for the cost of antimicrobial, there was a significant reduction from RM 24852.00 to RM 6582.40 ($p < 0.05$) and from RM 29497.00 to RM 14915.00 ($p < 0.05$) for colistin and meropenem respectively. The number of cases of antibiotic resistance was also declined in 2016 when compared to 2015. The implementation of AMS program in HQE II was shown to have a positive impact in reducing the antimicrobial consumption and the cost.

Keywords: Antimicrobial stewardship program, antibiotic, resistance

RISK FACTORS OF PACEMAKER IMPLANTATION INFECTION: A SINGLE CENTRE EXPERIENCE

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Abstract

Implantation of permanent pacemaker (PPM) is a device treatment for various brady-arrhythmias. Several risk factors have been associated with infection of PPM implantation, including peri-procedure antibiotics use. The objective of this study is to determine the associated factors of PPM implantation infection. A retrospective case note review of all patients whom underwent PPM implantation from January 2011 to July 2013, at a tertiary regional cardiac centre in East Malaysian state of Sabah was conducted. A checklist, which includes patient & procedural risk factors, and peri-procedural antibiotic(s) use, was used for data collection. Clinical surveillance of infection at discharge and at day-10 were carried out as part of routine practice. A total of 112 patients were included: 12 (10.7%) had PPM infection and 100 controls. All patients received pre-implant prophylactic use of antibiotics, varied at discretion of implanting clinician. Univariate analysis showed post-implant administration of Cefoperazone was associated with lower infection rate (OR 0.198: 95% CI 0.05-0.79; $p < 0.05$); Longer procedure duration was associated with higher infection rate (OR 1.016: 95% CI 1.004-1.028; $p < 0.05$). Multivariable logistic regression showed procedural duration (OR 1.016: 95% CI 1.003-1.029; $p = 0.015$) and post-implant Cefazolin (OR 0.196: 95% CI 0.046-0.842; $p = 0.028$) were independent factors for PPM infection. Pre-implant antibiotic choice was not significantly associated with infection rate. Implant infection was associated with longer procedural duration. This may be associated with procedural complexity, operator experience and choice of antibiotics, which deserve further study, in order to formulate preventive strategy to minimise risk of PPM infections, including antibiotic policy.

Keywords: Pacemaker, implant infection, antibiotic prophylaxis

APPROPRIATENESS OF DEEP VEIN THROMBOSIS (DVT) PROPHYLACTIC USE AMONG MEDICAL INPATIENTS: A DVT RISK ALERT TOOL (DRAT) STUDY

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Abstract

Increasing incidence of Venous Thromboembolism (VTE) has complicated treatment courses for hospitalized patients. Despite recommendation to support deep vein thrombosis (DVT) risk assessment and appropriate use of prophylaxis in medical inpatients, it is often neglected or prescribed unnecessarily by the clinicians. This study aimed to assess and compare the appropriateness of DVT prophylaxis prescribing between usual care versus a pharmacist-driven DVT Risk Alert Tool (DRAT) intervention among hospitalized medical patients. A prospective pre and post intervention study was conducted from November 2015 to November 2016 among medical inpatients at a secondary care hospital in Johor, Malaysia. DVT and bleeding risks were stratified using validated Padua Risk Assessment Model (RAM) and International Medical Prevention Registry on Venous Thromboembolism (IMPROVE) Bleeding Risk Assessment Model. Pharmacist-driven DRAT was developed and implemented in the post interventional phase. DVT prophylactic use was determined and its appropriateness was compared between pre and post study. Overall, 286 patients (n= 142 pre-intervention versus n= 144 post-intervention) were conveniently recruited. The prevalence of DVT prophylactic use among hospitalized medical patients was 10.8%. Appropriate use of DVT prophylaxis increased from 64.8% to 68.1% post DRAT implementation. Of note, among high DVT risk patients, DRAT intervention was observed to be a significant predictor of appropriate thromboprophylaxis use (14.3% versus 31.3%; odds ratio = 2.74; 95%CI: 1.10 to 6.80; p= 0.030). The appropriateness of DVT prophylactic use increased after implementation of pharmacist-driven DRAT intervention, particularly among those of high risk medical inpatients. Our study suggested that a method relying on integrated risk stratification with prophylaxis recommendation checklist may be an effective approach for the improvement of rational DVT prophylaxis prescribing.

Keywords: Deep vein thrombosis, appropriateness, prophylaxis, risk stratification, intervention

IMPACT OF ANTIMICROBIAL STEWARDSHIP PROGRAM (ASP) ON VANCOMYCIN USE: A DRUG UTILIZATION EVALUATION (DUE)

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Abstract

Drug Utilization Evaluation (DUE) is a structured method to monitor vancomycin utilization pattern. Studies have showed that irrational use of vancomycin may render ineffective treatment and pose risk of vancomycin resistance. Implementation of Antimicrobial Stewardship Program (ASP) is hence an essential multidisciplinary level evidence-based approach for healthcare institutions to guide the judicious use of antimicrobials. To date, information on the impact of ASP towards vancomycin use is scarce. This study aimed to conduct and compare vancomycin DUE before and after ASP implementation in a Malaysian secondary care hospital. A retrospective observational pre-post study was conducted from year 2013 to 2016 among hospitalised patients aged 12 years and above who received intravenous vancomycin therapy. Pertinent data on vancomycin use was retrieved from patients' medical records. An ASP, adopting the persuasive and restrictive approaches, was developed and implemented. Vancomycin usage trends were evaluated and compared. A total of 32 patients (n=12 pre-ASP versus n=20 post-ASP) were recruited. Appropriateness of vancomycin use improved from 91.7% to 95.0%. The number of patients received loading dose increased from 41.7% to 55.0% while incorrect initial dose reduced from 18.2% to 11.1% post-ASP implementation. Rate of attainment of effective corrected trough level increased from 41.7% to 70.0% whereas appropriate kidney function assessment increased from 66.7% to 90.0%. Median time for microbiological clearance dropped from 16 days (IQR 7.25, 22.50) to 10 days (IQR 7.00, 15.50) post study with median duration of vancomycin therapy reduced from 15 days (IQR 7.75, 20.25) to 10 days (IQR 6.25, 14.75). Our study revealed that ASP formed an effective collaboration among healthcare providers that improved vancomycin use while providing safe care. Future studies with longer duration are warranted to monitor sustainable impact of stewardship efforts.

Keywords: Antimicrobial stewardship program, vancomycin, drug utilization evaluation, resistance

PHARMACOVIGILANCE OPPORTUNITIES AND CHALLENGES IN THE GULF REGION

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Abstract

Pharmacovigilance (PV) is a growing challenge in the Gulf Cooperation Council (GCC) countries, which drove them to establish their own PV systems to address the safety concerns of the locally marketed products. The threat facing PV systems is the issue of underreporting and lack of awareness from both the healthcare professionals (HCPs) and the public. Therefore, this study was carried out to assess the Knowledge, Attitude and Practice of HCPs towards PV in the GCC region and to evaluate the current challenges and drivers for the success of PV in the Gulf Region. Convenient sampling was used in this study. An online questionnaire was designed and delivered using SurveyMonkey®. Social Network Sites (SNSs) have been targeted to reach out to the largest number of participants in the GCC region. The total number of the participants was 568. However, the total number of completed responses was 256 responses. Two-thirds of participants (n=170, 66%) were from the government sector, while the rest (n=87, 34%) were from the private sector. About two-thirds of respondents came across ADRs at their practice (n=163, 63.7%), while almost all of respondents (n=250, 97.6%) either agreed or strongly agreed that reporting of ADRs is necessary. When the participants were asked to state if they agree that ADR reporting is an ethical obligation and a professional duty, the majority of those who responded (n=199, 77.7%) agreed to that statement. Two-thirds of respondents (n=172, 67.2%) stated that lack of knowledge and information was the mostly challenge facing the successful implementation of PV services and ADR reporting practice. The main drivers stated by respondents for implementing a successful PV system were medical expertise followed by an effective legislation and guidelines (n=162, 63.3%, n=152, 59.4%) respectively. However, about one third of respondents claimed lengthy reporting time and difficulty to relate the drug to an adverse event (n=89, 34.8, n=91, 35.5%) respectively were the most demotivating factors to report ADRs. This study showed an opportunity for the Arab league, the GCC and Regulatory authorities (RAs) to advocate ADR reporting and also provided an opportunity for HCPs to communicate challenges and obstacles in their practices.

Keywords: Pharmacovigilance, knowledge, attitude, ADR reporting

T2DM PATIENTS' ADHERENCE TO REFILLS AND MEDICATION: A COMPARISON BETWEEN TELEPHONE AND COLLECT SERVICE AND CONVENTIONAL COUNTER SERVICE IN A HEALTH CLINIC

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Abstract

Pharmacy Value Added Services (PVAS) has been implemented in Malaysian public healthcare to improve patients' accessibility to follow-up medication supplies, hence improve adherence. Studies have shown that PVAS increase patient satisfaction and reduce waiting time but no study investigated the adherence status of patients using PVAS, which is an important indicator to measure the effectiveness of this service. The objectives were to compare medication and refill adherence score in type 2 Diabetes Mellitus (T2DM) patients with Conventional Counter Service (CCS) and Telephone and Collect (T&C) service and to determine the predictors associated with better adherence status. A comparative cross-sectional, single centred, self-administered based survey was conducted in one health clinic under Klang District. Patients attending the outpatient pharmacy, dispensed with at least one type of T2DM medication for at least 6 months were conveniently selected. The survey, adopted from a previous study, contained 28 items: demographic characteristics (9-item), medication refill supply and collection (7-item) and Adherence to Refill and Medication Scale (ARMS) (12-item). Data was analysed using SPSS software version 24 for 204 patients. T&C group shown better ARMS score mean (14.47 ± 2.37) compared to CCS group (16.67 ± 4.44) ($p < 0.001$). Retired patients, shorter travelling distance to pharmacy and patient asking someone else to collect their medication were significantly associated with better adherence status. Patients from T&C group demonstrated significantly better adherence to medication and refill showing that PVAS could be an effective option. Further work is needed to assess its generalizability to other chronic diseases and to various types of healthcare settings in Malaysia.

Keywords: Adherence, refill prescription, Pharmacy Value Added Services (PVAS), ARMS

THE PREVALENCE OF HYPERSENSITIVITY REACTIONS TO ANTIVENOMS ADMINISTERED IN TERTIARY HOSPITAL FROM 2013 TO 2016

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Abstract

Snakebite is an important medical emergency that can cause morbidity and mortality. Antivenom remains as the only specific treatment for snakebite, however, its use is associated with hypersensitivity reactions that can cause life-threatening (anaphylaxis) condition to the patient. Allergic reactions (Hypersensitivity Reactions) are inappropriate responses of the immune system to a normally harmless substance. The incidence of hypersensitivity reactions to antivenoms administered, the types of antivenoms reactions, the management and outcomes of antivenom reactions have been studied. There were 36 patients included in this study. Patients data were retrieved from the electronic medical record through the hospital computerized system. Some data were taken from the medical record unit. Descriptive data were presented with frequency and percentage where appropriate and illustrated in the form of graph, pie chart and table. Statistical analysis tests used were chi-square, t-test, and Mann-Whitney test when appropriate with p-value <0.05 (2-tails) is considered significant. Out of 36 patients, 22 (61.1%) patients developed hypersensitivity reactions and all had an early types of reaction. No patient with late (serum-sickness) reaction. These early hypersensitivity reactions were caused by the administration of 1/3 (33.3%) King cobra antivenom, 3/3 (100%) Malayan pit viper antivenom, 6/11 (54.5%) Neuro polyvalent antivenom, 5/5 (100%) Hemato polyvalent antivenom and 7/14 (50%) Cobra monovalent snake antivenoms. Out of 22, 12 (55%) patients had moderate to severe anaphylaxis, followed by 9/22 (41%) patients had mild reactions of itchiness and rashes. In terms of ADR reporting was poor, as only 1/22 (4.5%) was reported. In conclusion, the incidence of early hypersensitivity reactions to snake antivenom is high which is 61% and late (serum sickness) reaction is uncommon. There is a need for training in the form of Continuing Medical Education to the physicians, pharmacists or other healthcare practitioners for better diagnosis and reporting of adverse drug reactions.

Keywords: Snake Antivenom, Hypersensitivity Reactions, Early Reaction, Serum sickness, Adverse Reaction

AWARENESS AND KNOWLEDGE OF ADULT SUDANESE HYPERTENSIVE PATIENTS**SAMAH HUSSEIN^{1*}****¹ Department of Pharmacy Practice, Unaizah College of Pharmacy, Qassim University, Qassim, Saudi Arabia.****Email: samah-173@hotmail.com****Abstract**

Sudan is among the countries with high prevalence of hypertension. The present study aimed to assess the understanding of hypertension and its complications among the adult hypertensive patients in Khartoum state, the capital of Sudan. This study was a cross-sectional, clinic-based, descriptive survey targeting patients being treated for essential hypertension. The data were collected from June to July 2009, using a 34-items questionnaire filled in during the interviews with the participants of the three largest health care centres in the state of Khartoum. The investigator distributed 170 questionnaires. SPSS version 17 was used to analyse the data. Of the 170 patient surveyed, 155 responded with an overall response rate of 91%. The results showed that 48.4% of the patients have been diagnosed with hypertension for more than five years. 60% of the respondents were male. At the time of the research, all participants were on antihypertensive treatment. Most patients had basic knowledge and understanding of the term "Hypertension" but lack of information on causes, complications, and risk factors. The participants indicated insufficient knowledge of the relationship between hypertension and physical activities, other health conditions, dietary habits, and lifestyle modifications. Moreover, 42% of the subjects reported no knowledge on their personal blood pressure readings, and 62% were not aware of the need to seek for a healthcare professional for blood pressure management. Considerable barriers in awareness hypertension were revealed by this study, which were further aggregated by poor understanding of the importance of timely professional care from qualified physicians. To enhance general awareness about hypertension, a sustained and expanded public educational programme may be beneficial for improvements in awareness and knowledge about specific aspects of hypertension, including risk factors, complications, and preventive measures.

Keywords: Hypertension, blood pressure, awareness, risk factors, obesity, Sudan

A REVIEW ON GLYCAEMIC CONTROL AMONG PATIENTS WITH DIABETES MELLITUS IN SAUDI ARABIA

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Abstract

Diabetes mellitus is a leading cause of death and disability worldwide. At present, 150 million people worldwide are estimated to have diabetes and this number is likely to increase to 300 million by 2025. The aim of this review was to describe the glycaemic control and the factors affecting it among diabetic patients in Saudi Arabia. The studies undertaken on glycaemic control among diabetics and the factors affecting glycaemic control among patients with diabetes mellitus in Saudi Arabia were retrieved from Google Scholar and Saudi Digital Library database including Medline and other electronic sources. The results showed that the proportion of patients with poor glycaemic control ranged from 49% to 67%. 90% of patients were older than 40 years of age and were either overweight or obese. Female diabetics were found to be younger than their male counterparts. The poor glycaemic control was more prevalent in female patients when compared to male. However, the surprising element was that the patients' educational background had no impact on the glycaemic control but the patients with high educational level exhibited better adherence and hence compliance in glycaemic control. Control of diabetes mellitus is still a major concern in Saudi Arabia. From this review, we concluded that prevalence of poor glycaemic was higher in patients with age 40 years or more and more females presented with poor glycaemic control as compared to males. However further studies are needed to explore the factors leading to poor glycaemic control and how to manage it.

Keywords: Diabetes mellitus, glycaemic control, Saudi Arabia

AVAILABILITY OF MUSIC THERAPY IN DEMENTIA CARE: A QUALITATIVE FOCUS GROUP STUDY AMONG THE PHARMACISTS

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Abstract

Dementia is a syndrome due to disease of the brain, usually of a chronic or progressive nature, in which there is impairment of multiple higher cortical functions, including memory, thinking, orientation, comprehension, calculation, learning capacity, language and judgment. More than 50 % of people living with dementia are residing in the countries with low to middle income. The annual incidence rate of dementia in Malaysia was 0.02 % in the year 2005, and is predicted to increase to 0.126 % and 0.454 % in 2020 and 2050, respectively. Music therapy has found its niche among the practices of alternative and complementary therapies available for the management and care of the persons living with dementia. The availability of music therapy as a behavioural therapy is itself ready to ensure a better provision of dementia management in Malaysia. This study examined the availability of music therapy in hospital and community pharmacies in Malaysia with respect to dementia treatment and/or prevention through face-to-face and online surveys. Pharmacists or pharmacy in Malaysia did not provide or promote music therapy as a part of their services. The pharmacists were however willing to venture into music therapy for dementia management. The majority of them regarded music therapy as a promising field of healthcare division in Malaysia.

Keywords: Music therapy, dementia, pharmacist

VALIDATION OF ENGLISH VERSION OF DIABETES MANAGEMENT SELF-EFFICACY SCALE (DMSES) AMONG ADOLESCENT DIABETES MELLITUS PATIENTS IN BANGLADESH

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Abstract

The global burden of diabetes mellitus (DM) is substantial, especially in developing nations. The prevalence of Type 1 DM in Bangladesh at 4.2 new instances/100,000 children/ year in 2013. Managing DM is challenging given the chronic nature, complexity of the disease management and the multiple daily self-care decisions that need to be made, in particular among adolescent DM patients. Low self-efficacy level among the adolescent DM patients could have been the underlying reason for poor daily management of blood glucose, leading to poor glycaemic control. A 20-item Diabetes Management Self-Efficacy Scale (DMSES), assesses the extent of confidence of respondent in managing his/her blood glucose level, foot care, medication, diet and level of physical activity, is one of the most commonly used instrument. However, it has not been validated for use in the Bangladeshi adolescent DM patients. Accordingly, this pilot study aimed to describe preliminary validation of the English version of the DMSES among the Bangladeshi adolescent DM patients. Face and content validity was evaluated by three endocrinologists and patients in Bangladesh. A total of 60 Bangladeshi adolescent DM patients who can communicate in English were invited to participate in this study. Responses were rated on an 11-point scale; 'Cannot do at all' (0), 'Maybe yes/maybe no' (5) and 'Certain can do' (10). All responses were then summed to produce a single score, ranging from 0 to 200, for self-efficacy. Higher scores indicating greater self-efficacy. Reliability of DMSES was assessed using Cronbach's alpha while discriminant validity was assessed through the association of DMSES score with glycated haemoglobin (HbA_{1c}) level (by employing Spearman's rank correlation test). Findings revealed that patients with lower HbA_{1c} levels ($p = 0.008$) reported higher self-efficacy. Cronbach's alpha coefficient obtained were 0.739, indicating good reliability of the DMSES among the Bangladeshi adolescent DM patients.

Keywords: Self-efficacy, adolescent, diabetes

PARENTS' KNOWLEDGE, ATTITUDES AND BELIEFS OF CHILDHOOD FEVER MANAGEMENT IN MALAYSIA

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Abstract

Fever is one of the most common presenting complaints in childhood as many as one third of all paediatric consultations in general practice. Up to date, no study has been done to assess parents' knowledge, attitudes, and beliefs on childhood fever management in Malaysia. This study was to determine Malaysian parents' knowledge, attitudes and beliefs in the management of fever in children. A cross-sectional study of multiracial parents in Federal Territory of Kuala Lumpur from February 2017- May 2017 were conducted. A validated self-administered questionnaire was distributed to parents through convenient sampling method. A total of 155 parents were recruited as participants in this study. Data were collected and analyzed as descriptive analysis (e.g. frequency and percentage of the response to each question). Cronbach-alpha analysis was used to measure the reliability of data collected. 14.2% of parents were Malay, 69% were Chinese, and 16.8% were Indian. 61.3% of the parents had moderate knowledge level on childhood fever management. Parents' with monthly household income > RM5000 (88.9%) did not believe that greater price of medicine could give a better efficacy in children's fever treatment whereas those with household income ≤ RM1000 (68.4%) believed such factor. All Malay respondents (100%) believed that traditional medicine played an important role in relieving childhood fever. Most parents (43.2%) were perceived the harmful effects of fever as brain damage. 79.4% of respondents claimed that their feverish children did not develop into complication. Interestingly, it was shown that 47% of surveyed parents were somewhat worried in dealing with childhood fever. Parents in Kuala Lumpur showed a lack of knowledge on childhood fever and disagreed that the price of medicine was proportionally reflecting its efficacy. Parents who perceived fever as a serious threat or who had witnessed their children's fever complication tend to be over-concerned and develop fever phobia.

Keywords: Fever, Malaysian parents, Knowledge, fever management

AWARENESS OF STATINS USAGE AMONG PEOPLE WITH TYPE 2 DIABETES: A GENDER-BASED STUDY

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Abstract

Dyslipidaemia is one of the prominent risk factors for cardiovascular disease (CVD). Cardiovascular disease is also the leading cause of death in Malaysia. The study conducted to compare the knowledge, attitude, and practice of females and males about statin utilization in diabetic dyslipidaemia therapy. A cross-sectional study was done at Penang General Hospital, from January to July 2017, Malaysia. A total of 200 pharmacists and physicians were enrolled using a pre-tested and validated questionnaire with Cronbach's-Alpha: 0.783. It involved demographic data, knowledge, attitudes, and practice of statins utilization. The survey guided by the 2013 ACC/AHA dyslipidaemia therapy guidelines. IBM-SPSS V23.0 did data management. Females represented 114 (57%) with age (30.2 ± 5.9) years and males were 86 (43%) with age (31.1 ± 6.2) years (P-value: 0.288). The mean of females' experience was (5.1 ± 6.2) years and males (5.6 ± 5) years (P-value: 0.544). Only (17.5%) of females and (24.4%) of males have postgraduate qualifications (P-value: 0.234). The knowledge of females and males about statins was (74.6 ± 15.6%), and (75.1% ± 14%) respectively, (P-value: 0.795). Females and males correctly answered the practice questions with (55.8 ± 16.4%), and (56.3 ± 16.2%), (P-value: 0.834). Most of the females (60.5%) and males (59.3%) have a positive attitude about statins therapy for patients with type 2 diabetes. Only (20.2%) of females and (20.9%) of males have a neutral attitude. However, (19.3%), and (19.8%) of females and males have a negative attitude toward statin treatment (P-value: 0.871). There is a statistically non-significant difference between females and males who had an equivalent level of experience and postgraduate education in knowledge, attitude, and practice. Females and males have a significant level of awareness and positive attitude about statins utilization among individuals with type 2 diabetes.

Keywords: Awareness, gender, KAP, statin, type 2 diabetes

COMPARISON OF CLINICAL AND HOSPITAL PHARMACISTS' AWARENESS OF STATINS USAGE IN DIABETIC DYSLIPIDEMIA MANAGEMENT: A CROSS-SECTIONAL STUDY

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Abstract

The 2013 American College of Cardiology/American Heart Association (ACC/AHA), cholesterol management guidelines, stressed global cardiovascular (CV) risk reduction as opposed to targeting low-density lipoprotein-cholesterol (LDL-C) levels, emphasized the use of statins lowered the risk of CV diseases. The study intended to compare the knowledge, attitude, and practice of clinical and hospital pharmacists towards statins utilization in diabetic dyslipidemia management (DDM). A cross-sectional study was conducted at Pulau Pinang Hospital, in January – July 2017, Penang, Malaysia. About 43 pharmacists were enrolled using a pre-tested and validated questionnaire with good reliability (Cronbach's-Alpha: 0.783). It includes demographic data, knowledge, attitudes, and practice of statins use. The survey based on the 2013 ACC/AHA dyslipidemia therapy guidelines. Data were analysed using IBM-SPSS version 23.0. Clinical pharmacists (CPHs) represented 51.2% with age (31.4 ± 5.9) years, and hospital pharmacists (HPHs) were 48.8% with age (26.6 ± 3.3) years ($p= 0.020$). The mean duration of working experience for CPHs and HPHs was 6.3 ± 4.1 years and 2.8 ± 2.5 years, respectively ($p= 0.138$). Only (22.3%) of CPHs and (4.8%) of HPHs have postgraduate qualifications ($p= 0.001$). The knowledge of CPHs and HPHs about statins was ($80.5 \pm 12.1\%$), and ($69\% \pm 6.2\%$) respectively, ($p= 0.038$). CPHs and HPHs correctly answered the practice questions with ($65 \pm 20.4\%$), and ($44.8 \pm 8.7\%$), $p < 0.001$. Most of the CPHs (59.1%) and HPHs (57.1%) have a positive attitude about statins therapy in DDM. About (22.7%) of CPHs and (33.3%) of HPHs have a neutral attitude. However, (18.2%), and (9.5%) of CPHs and HPHs have a negative attitude toward statin treatment ($p= 0.997$). There is a statistically significant variance between CPHs and HPHs in knowledge, and practice. CPHs have a higher level of knowledge, and practice about statins use in DDM than HPHs. However, there is a statistically non-significant difference in their attitude.

Keywords: Awareness, gender, KAP, statin, type 2 diabetes.

INFORMATION SUPPORT TOOL FOR MALAYSIAN BREAST CANCER PATIENTS ON CHEMOTHERAPY

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Abstract

Breast cancer is the most common cancer among women in Malaysia. Chemotherapy is one of the main treatments for breast cancer, however, misconceptions on chemotherapy continue to persist. As such, development of an information support tool on chemotherapy for breast cancer patients in Malaysia would be of paramount importance. The aim of this study was to develop and validate an information support tool in the form of booklet and web-based in Malay and English for breast cancer patients on chemotherapy. This involved conducting extensive literature review, development of first draft, content validation by experts in the field, pilot testing and finalisation of the revised tool. Findings from a qualitative study conducted on breast cancer patients who have completed their chemotherapy were also incorporated into the tool. The tool entitled *Chemotherapy for Breast Cancer* included topics on statistics of breast cancer in Malaysia, risk factors, treatment modalities, chemotherapy regimens, side effects of chemotherapy, patients' experiences on chemotherapy, hormonal therapy as well as the use of complementary and alternative medicine. Pilot testing of the tool on 22 patients with breast cancer receiving chemotherapy found that the majority of the patients (n=21, 95.4%) agreed that the tool was easy to follow and the tool increased their knowledge on chemotherapy for breast cancer (n=19, 86.4%). They would also recommend the tool to other women with breast cancer on chemotherapy or considering chemotherapy (n=21, 95.5%). The tool will be a useful and reliable source of information for breast cancer patients undergoing chemotherapy and can be utilised by healthcare practitioners during treatment consultations.

Keywords :Breast cancer, chemotherapy, information support tool

FRAILTY SYNDROME IN COMMUNITY-DWELLING OLDER PEOPLE**MOHD YADZLAN YAHYA, MARHANIS SALIH AH OMAR***

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Abstract

Frail elderly constitutes most consumers within the health care system as they tend to experience progressive physiological changes due to the aging process. Frailty may cause severe adverse health outcomes at which of getting elevated risk of falls, less mobility, hospitalization, less independent, disabilities and even may lead to fatal. This study was aimed to investigate the behaviour of older people confronting the frailty syndrome. A cross-sectional study was conducted among community dwelling older adults in Kuala Lumpur started from May 2017 until November 2017. The FRAIL questionnaire was used to collect detailed information on a frailty scale. Chi-square test was used to compare population characteristics across FRAIL scale status. In this study, 244 community-dwelling older people with frailty syndrome were recruited. They were further categorized into frail (39%, n= 96) and pre-frail (61%, n= 148). The level of fear of falling among the respondents is low with mean score of 40.77 (SD 28.65). Despite the frailty syndrome, the majority of the respondents opted to not to talk to their family and friends (84%, n= 204) or even their health care providers (89%, n= 218) regarding the syndrome or preventive measures. The term frailty syndrome was much related with the older adults and high falling risk and falling will further affect their quality of life.

Keywords :elderly, bone, fall

TRADITIONAL COMPLEMENTARY MEDICINE USE AMONG PATIENTS WITH CHRONIC KIDNEY DISEASE

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Abstract

Chronic kidney disease (CKD) is a worldwide problem that reduces quality of life and increases mortality. In recent years, the use of traditional and complementary medicine (TCM) have become more popular among the population including renal patients. However, patients with CKD are more vulnerable to TCM use. It is understood that approximately 50% of CKD patients take TCM with the most common being herbs. The risk of taking oral TCM is the unknown compounds in the herbal mixture. The current work aims to identify the use of TCM and effects in CKD patients in Malaysia. The study was performed in a teaching hospital in Malaysia. Patients aged ≥ 18 years and diagnosed with CKD were included in the study. Those that refused to be interviewed were excluded. A total of 160 CKD patients were included. It was found that 26% (n=42) of the patients admitted to taking TCM. There were 35 types of oral TCM and 42 types of non-oral TCM. Among the common TCM used were oral herbs, herbal juice, Arabic gum, tumeric, coriander, Java tea and massages. It was demonstrated that there was higher level of electrolyte imbalance in patients taking herbal versus (n=19) herbal+non-oral (n=16) and non-oral medicine (n=7) ($\chi=9.9$, $p=0.01$) on admission. In conclusion, the use of TCM in renal patients should be further investigated in the local population due its popular use.

Keywords :renal, traditional, complementary, medicine, herbal

ACTION RESEARCH IN COMMUNITY PHARMACY: DEVELOPMENT OF MEDICATION REVIEW MODULE

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Abstract

The prevalence of diabetes mellitus in Malaysia is increasing and despite availability of effective therapies, patients still achieve sub-optimal clinical outcomes. Pharmacists have roles in supporting patients in their diabetes management. Medication review by community pharmacist is an opportunity for patients to receive advice and counselling on medication. It is an individualized meeting between a patient and pharmacist, aiming to review the patient's medication in order to ensure the safe and quality use of medication. Therefore, the objective of this study is to develop a Community Pharmacy Medication Review (CPMR) module for Malaysian community pharmacy. Action research methodology will be employed. Action research gives the flexibility to the researcher to be an observer, service provider and a researcher at the same time. Action research is a cycle whereby continuous modification of the medication review model will occur based on the challenges, barriers and the feasibility of providing such service in the community pharmacy setting. Action research is an approach to perform research which is based on a problem-solving relationship between researchers and clients, which aims at both solving a problem and at collaboratively generating new knowledge. Even though it is widely used in other disciplines, but limited researches have been carried out in pharmacy practice. This method is chosen as it is expected that several cycles will be required in this study in order to get to the best practice. In general, action research method involves the review of current practice, identify an aspect that needs improvement, imagine a way forward, try it out, take stock of what happens, modify the plan in the light based on findings, and continue to monitor and evaluate the modified action and continue until satisfaction is seen. Suitable models of medication use review will also be sought from the literature as well. Researcher, academician, community pharmacist and other stakeholders will be involved in providing their views and comments to enhance the proposed CPMR module.

Keywords : Action research, pharmacy practice, medication review, primary health care

ATTITUDE OF COMMUNITY PHARMACISTS TOWARD THE SALES OF HEALTH SUPPLEMENTS

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Abstract

The usage of health supplements has been increased because of their affordability and accessibility in the market besides allopathic medicines. This trend has led to increasing demand by the public to purchase health supplements in the community pharmacy. Nonetheless, little is known about the views towards the sale of health supplements among community pharmacists. Therefore, the purpose of this study was to assess the attitude of community pharmacists towards the sales of health supplements. A cross-sectional survey was conducted at the community pharmacies in Selangor. By using a convenience sampling method, a set of self-administered questionnaires was developed and distributed to the community pharmacists to collect pharmacists', their customer backgrounds and their attitude towards the sale of health supplements. A total of 85 pharmacists have participated (51%), with the majority of them were female (80%) and aged 20-29 years old (65.9%). More than two-third of respondents (69.9%) managed to generate more than RM300 of health supplements' sale per month. Most pharmacists acknowledged the importance of profit generated from selling health supplements (74.1%). They admitted that the presence of consistent demand from the middle-age group of customers generated a high profit from the sale of health supplements (87%). In addition, most of their customers preferred consuming non-medicinal supplements than medicines (66.3%), probably due to the perceived better safety profile of health supplements. There was a significant association between attitudes of female community pharmacists that they agreed by selling the health supplements product could create business competition among the community pharmacies ($p < 0.05$). Even though by selling health supplements could be one of factors approaches to sustain the business of community pharmacies, proper counselling on selection and information of each product should be prioritized in order to ensure proper use, safety and efficacy of health supplements among the community.

Keywords : attitude, community pharmacists, health supplements, sale

KNOWLEDGE, ATTITUDE, AND PRACTICE ON CUPPING THERAPY AMONG STUDENTS OF UiTM PUNCAK ALAM CAMPUS

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Abstract

Cupping therapy is an ancient form of complementary and alternative medicine. It has gained popularity among Malaysians. A current research suggest that cupping therapy appears to be effective for various diseases or conditions. Since cupping therapy is common in our society, there is a need to assess the level of knowledge, attitude and practice of this therapy especially among students of UiTM Puncak Alam. This study was conducted to determine the knowledge, attitude and practices of cupping therapy among students of Universiti Teknologi Mara (UiTM), Puncak Alam and describe its relation with demographic profile such as gender and ethnic. A set of questionnaires were used to obtain data as well as to evaluate the level of knowledge, attitude and practice. The questionnaires were distributed to the students by using convenience sampling method. The collected data was then analysed by using SPSS 20. The level of knowledge, attitude and practice of UiTM Puncak Alam students was assessed according to gender and ethnic. Majority of the respondents were female (75.86%) and the rest were male (24.14%). For ethnicity, 89.66% of the respondents were Malay and other respondents only contributed about 10.34%. In this study, it was found that the knowledge was dependant on gender ($p=0.009$) but not dependant on ethnic ($p=0.549$). The data on attitude revealed that it was not dependant on both gender ($p=0.988$) and ethnic ($p=0.804$). Practice on cupping therapy among the students was dependant on gender ($p=0.045$). However, the practice was independent on ethnic ($p=0.765$). This study showed that the practice of cupping therapy was uncommon among students of UiTM Puncak Alam. Despite that, their knowledge and attitude towards cupping therapy can be considered as good. Factors such as gender and ethnic influenced the level of knowledge, attitude and practice.

Keywords: cupping therapy, alternative medicine, Malaysian public, knowledge, attitude.

THE CLINICAL EFFECTIVENESS OF LEVOTHYROXINE INTAKE BEFORE BREAKFAST VERSUS AT BEDTIME IN PATIENTS WITH HYPOTHYROIDISM: A PROSPECTIVE INTERVENTIONAL STUDY

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Abstract

Levothyroxine absorption following oral administration is the lowest when taken with food. Several studies have suggested that the administration of levothyroxine at bedtime as an alternate in comparison to the conventional before breakfast dosing. This study aimed to compare the clinical effectiveness of levothyroxine administration, either in the morning or at bedtime and to determine the effect of administration time of levothyroxine on patient's quality of life (QoL). A prospective, interventional study was conducted at the Endocrinology Clinic, Hospital Tuanku Ja'afar, Seremban from May to November 2017. Hypothyroid patients were assigned to either before breakfast or at bedtime regime through convenient sampling. After 12 weeks, serum thyroid hormones were tested and QoL variables were assessed using the 36-Item Short Form Health Survey and compared with baseline. Primary outcome measures were the changes in TSH and T4 levels. Secondary outcome were as following: QoL, serum creatinine, liver function, BMI, heart rate and blood pressure. A total of 35 patients completed the 12 weeks study period and were available for data analysis. The serum TSH and T4 level showed improvement in bedtime regime group compared to morning group, in which the mean TSH level reduced from 2.46 ± 1.34 mIU/L to 1.79 ± 0.99 mIU/L ($p = 0.13$) while the mean T4 level increased from 15.25 ± 2.65 pmol/L to 15.73 ± 3.28 pmol/L ($p = 0.51$). Secondary outcomes such as QoL assessment, blood pressure, heart rate and laboratory results (albumin, ALP and ALT) showed no significant difference between morning and bedtime groups. Our study showed the bedtime administration of levothyroxine is non-inferior in improving serum TSH and T4 in hypothyroid patients in comparison to the morning regime. No marked improvements were found in the QoL variables in both administration times.

Keywords: levothyroxine, T4, TSH, before breakfast, at bedtime.

PHARMACY EDUCATION: PICTOGRAMS' APPS AS A PUBLIC TOOL FOR UNDERSTANDING MEDICINE LEAFLET INFORMATION

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Abstract

Medicine or patient information leaflet (PIL) is a written material insert provided in a medicine package that describes information about the respective drugs. It is one of the most important tools for delivering medical instructions to the patients. Thus, it must be carefully developed in order to increase the understanding of patients towards the medical instructions. In a conventional PIL, health care professionals commonly use technical terminologies and medical jargons that are quite difficult to be understood by a general population. Recent studies found that the aid of pictogram, a visual aid or symbol used to substitute written text, could help to convey information and instructions in the leaflet more effectively. Geographical and language barriers as well as differences in social background are major factors that limit the understanding in PIL. Pictograms are a universal communicator that enables people in different range of age, race, religion, even different countries to communicate with each other in their own mother tongues. This research is intended to evaluate the effectiveness of the newly developed pictograms' apps as a public tool for understanding the medicine leaflets information in pharmaceutical products. Incorporation of the pictograms' apps is hypothetically believed to transmit information in a clear, simple, yet expeditious. With smartphones being the most popular mobile device, developing mobile applications has become a current trend in various areas including pharmaceutical fields. A pictogram-aided apps could help to promote the use of effective medicine leaflet to a wider application. It could also provide a viable option to address the need for better communication and information resources as well as enhance the development of health-related mobile apps with great potential for commercialisation.

ANTIHYPERTENSIVE DRUG UTILIZATION STUDY AT OUTPATIENT CLINIC IN HOSPITAL TENGGU AMPUAN RAHIMAH, KLANG

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Abstract

Hypertension is a leading risk factor for mortality. However, only one third of the diagnosed hypertension patients have controlled hypertension. Non-pharmacological and pharmacological treatments are given to control the hypertension. There are several guidelines on management of hypertension. The aim of this study was to determine the type and pattern of antihypertensive drugs used by patients, whether they are in line with the guidelines in management of hypertension and to determine the association between demographic data of the patients with the antihypertensive therapy received. This study was a retrospective cohort study. The study setting was at outpatient clinic of Hospital Tengku Ampuan Rahimah. 1000 prescriptions from January, March and June 2014 were included in this study. The study revealed that there were slightly more female patients (51.7%) than male patients (48.3%). Patients with age groups of 61 to 70 years old were the highest (27.5%). They were more patients of non-geriatrics (66.6%) than geriatrics (33.4%). Malays (37.1%) lead with the highest percentage followed by Indians (29.2%), Chinese (28.0%) and others (5.7%). For hypertension patients with comorbidities, the highest was diabetes (33.1%) followed by hyperlipidemia (29.8%) and ischemic heart disease (8.2%). The commonly prescribed therapy was combination therapy (62.4%) compared to monotherapy (37.6%). The commonly used drugs were first line antihypertensive drugs (87.9%) and 2 combinations of drugs (38.9%). The highly prescribed antihypertensive drugs were Calcium channel blockers (59.2%), Beta blockers (46.8%), ACE inhibitors (39.7%), diuretics (24.5%) and Angiotensin receptor blockers (12.9%). In conclusion, the type and pattern of antihypertensive drugs used at the outpatient clinic of Hospital Tengku Ampuan Rahimah were accordance to the hypertension management guidelines. The antihypertensive drugs therapy and doses that were being prescribed were also in line with the hypertension guidelines and the choice was influenced by comorbidities in patients.

Keywords : Hypertension, Antihypertensive drugs, Prescribing pattern

**A CROSS-SECTIONAL STUDY ON PHARMACY STUDENT'S TENDENCY TOWARD ENTREPRENEURSHIP
AFTER GRADUATION IN UiTM MALAYSIA****FATHIN AZUREN BINTI MOHAMMAD ROSDI¹, AHMAD FAUZI BIN DALI²**¹ Department of Pharmacy Practice, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia

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Abstract

Entrepreneurship involving willingness to take risk, develop, organize and manage a business venture, idea, or good or service. An entrepreneurial spirit can be thought to include elements such as creativity, uniqueness, developing potential and business savvy. With all these skills, future pharmacist can equip themselves so that they can be self-employed and market-ready after graduation. The study aimed to assess pharmacy students' tendency toward becoming entrepreneurs within their chosen pharmacy work environments and to determine the association between socio-demographic factors with students' tendency towards becoming entrepreneurs. A descriptive, cross-sectional design was used to survey a simple random sample of fourth year BPharm students in UiTM Puncak Alam Campus. A 33-item questionnaire with 2 sections was administered. Section 1 was demographic backgrounds and section 2 was Pharmacy Student Entrepreneurial Orientation Scale (PSEO). For section 2, it consisted of 3 factors and 23-item summated scale. Factor 1 are proactiveness (3 items), work ethic (4 items) and empathic supersalesperson (4 items). Factor 2 focuses on student's innovativeness (5 items) and have workplace autonomy (4 items). Factor 3 was about the extent in which students willing to take the risk or just be a followers (3 items). The response rate was 100%. The resulting 3-factor, 23-item Pharmacy Student Entrepreneurial Orientation (PSEO) summated scale was shown to be reliable (Cronbach alpha = 0.913) and normally distributed. Higher mean PSEO scores were found for students who choosing industry and retail-independent as their first choice. Higher mean PSEO score indicated higher tendency towards entrepreneurship. There was no association between any socio-demographic factors with students' tendency towards becoming entrepreneurs. University should play its role in motivating the students by providing the necessary training and courses to instill more positive attitude of the students towards entrepreneurship.

Keywords :Pharmacy student, entrepreneurship, graduation, workplace

KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANTIBIOTIC USE AND ITS RESISTANCE AMONG STUDENTS IN UITM PUNCAK ALAM

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Abstract

Antibiotics is one of the most frequently prescribed drug by the doctors, but often been misused. The misuse of antibiotics is the key element for the increasing of antibiotic resistance. Many approaches have been suggested to overcome the problem of misuse of antibiotics that can lead to antibiotic resistance. For this to be a success, an assessment need to be made for the target group in their knowledge, attitudes and practices (KAP) to ensure that the selected approaches are suitable and have effective outcomes. This study was conducted to determine level of knowledge, attitude, and practice towards antibiotics use and its resistance among students in UiTM Puncak Alam, Selangor and their association to demographic characteristics. This study was conducted among students by convenience sampling. Self-administered questionnaire consists of five sections; demographic characteristics, knowledge towards antibiotics use and resistance, attitude and practice towards antibiotic use were distributed. Result were analyzed by using Statistical Package for Social Sciences (SPSS) version 24.0. A total of 365 respondents were obtained which majority of them were female (82.7%), from Faculty of Pharmacy (38.1%), third year students (39.2%) and have experience taking antibiotics at least once in their lifetime (91.5%) and do not have any family background related to healthcare (57.3%). Overall, most of students (41.6%) have good knowledge regarding antibiotics use and resistance, exhibit positive attitude (55.3%) and demonstrate good practice (71.0%) towards antibiotics use. Besides, there is statistically significant reported between demographic characteristics item with level of knowledge, attitude and practice. In addition to that, there is a moderate positive association between level of knowledge and level of attitude and practice. Stakeholders can use this information to construct better educational plan regarding antibiotics use and its resistance to tackle the interest of students to be more aware with antibiotics resistance issues.

Keywords : antibiotics use, resistance, student, KAP survey

ASSESSMENT OF METHODOLOGICAL QUALITY OF COST-EFFECTIVENESS ANALYSIS OF ADJUVANT TRASTUZUMAB FOR EARLY BREAST CANCER IN ASIA

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Abstract

Adjuvant trastuzumab was shown to be significantly improved disease-free survival among women with over-expresses Human Epidermal growth factor Receptor 2 (HER2)-positive breast cancer. Since then, a few cost-effectiveness analyses (CEA) of adjuvant trastuzumab for early breast cancer in the Asian setting were published. However, the methodological quality of these economic evaluations remains unknown. Therefore, this study aimed to evaluate the methodological quality of the CEA of adjuvant trastuzumab for early breast cancer conducted in the Asian countries. 57-item Philips and 10-item Drummond checklists were used to assess the methodological quality of these CEA by two independent reviewers. The Drummond checklist consists of general criteria that assessing the study structure, consequences, analysis and finally presentation and discussion of the economic study. The Philips checklist focused more on modelling methods and was divided into 3 main criteria: structure, data and consistency. Disagreement between reviewers were resolved by consensus. Data were then analysed descriptively. A total of six studies were included. All studies fulfilled more than half of the requirements in Drummond and Philips checklist. All studies were presented with a well-defined research question, comprehensive description of alternatives, all relevant cost and consequences were included and, adjusted for present value, and sensitivity analysis was performed to define the uncertainty. All studies fulfilled 50% of the components in structure and data as stated in Phillip checklist, while the internal and external consistency were not justified by most of the economic studies. All CEA were generally well conducted. Future studies should incorporate the evidence for consistency measurement as it was one of the important factors in determining the quality of the model.

Keywords :Adjuvant trastuzumab, Asian Countries, Early breast cancer.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE: KNOWLEDGE AND AWARENESS AMONG PUBLIC IN RURAL AREAS OF BAGAN SERAI, PERAK.

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Abstract

Chronic Obstructive Pulmonary Disease (COPD) is a respiratory disorder that mainly caused by smoking. It is commonly associated with substantial morbidity and high mortality across the world and specifically, in Malaysia. The lack of knowledge and awareness on the dangers of COPD caused by smoking among Malaysian can lead to an increasing prevalence of respiratory disease including COPD. The assessment of the awareness and knowledge on COPD is important as it will give some information to the health authorities to conduct any intervention program regarding COPD. The knowledge level and awareness on COPD among people in rural areas, however, is still unknown. The aim of the present study was to assess the knowledge and awareness on COPD among people in rural areas of Bagan Serai, Perak. A three-section questionnaire that assessed on the level of awareness and knowledge was administered to people at three villages at Bagan Serai, Perak. The collected data were then analysed using SPSS Version 20. A total of 305 respondents participated in this study. This study concluded that 67.5% (n =206) of the respondents achieved a moderate level of knowledge while respondents with low knowledge approximately 6.2% (n =19). There was no relationship between gender and knowledge; age group and awareness level and smoking status and COPD knowledge level. However, according to this study, there was a relationship between smoking status and awareness level (p = 0.004). It is suggested that the similar study should be conducted in other rural areas to provide more relevant data with regards to prevention and management of COPD. Furthermore, the extensive COPD educational campaign should be provided to general population especially to the residents of rural areas.

Keywords :Chronic Obstructive Pulmonary Disease (COPD); knowledge; awareness; rural areas

A COMPARATIVE STUDY OF ATTENTION AND MENTAL ALERTNESS LEVEL BETWEEN COFFEE AND GREEN TEA USERS IN KPJ HEALTHCARE UNIVERSITY COLLEGE

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Abstract

College students in today's society have become dependent on coffee due to the presence of caffeine for their daily activities. This paper focuses on the effect of two beverages which are green tea and coffee that have different phytochemical ingredients that responsible for attention and mental alertness. The aim of this research was to compare the attention and mental alertness level between coffee and green tea consumption among students of KPJ Healthcare University College on human biological and psychological functioning of the students. The study was conducted by using a pre-post-test study design, in which forty-five (45) subjects were recruited upon obtaining their consent. The study was then carried out in two sessions, in which green tea and coffee was supplied to the participants once per week, following a seven days of wash-out period. The attention and mental alertness of each subject was measured by the differences of measurement during pre-sampling and post-sampling upon consumption, in the context of blood pressure, heart rate, human benchmark tests, average aptitude test, Toronto Hospital Alertness Test (THAT) and ZOGIM-A questionnaires (i.e. at baseline). Data was analysed using using IBM SPSS Software Version 20. From this study, it was found that coffee and green tea both have significant improvement in the test subject and it can be observed by way of testing their alertness before and after consumption. Both beverages showed a positive outcome in attention and mental alertness within 30 minutes following the intake in term of increase systolic blood pressure, shorter reaction time tests and responds through Toronto Alertness Hospital Test (THAT). Overall, the findings raise the possibility that coffee and green tea when taken alone may have a role in altering physiological and cognitive performance be it in a positive or negative manner.

Keywords :comparison, coffee, green tea, attention, alertness

KNOWLEDGE AND PRACTICE OF UNDERGRADUATE ALLIED HEALTH SCIENCE STUDENTS AT KPJUC TOWARDS IMMUNIZATION

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Abstract

Some parents in Malaysia are refusing to vaccinate their children and it is a great health concern. Immunity is defined as a person's resistance towards a disease after administration of a vaccine. Furthermore, immunization is a preventive health strategy for diseases aimed at improving mortality, morbidity and reducing disease burden. This study's main objective was to assess the knowledge and practice of immunization among undergraduates of allied health sciences in KPJ Healthcare University College Nilai, Malaysia. A survey was conducted from December 2016 to July 2017 using a validated 20-item questionnaire in both Malay and English languages. A total of 112 students from Schools of Physiotherapy, Medical Imaging, Nursing and Pharmacy self-administered and completed the survey questions. Most of the respondents were females 92% (n=103). Demographic information, knowledge and practice scores were summarized using descriptive statistics. The results showed that the students obtained a score of 75.9% (good) on knowledge while the score for practice was 65.2% (fair). The demographical factors of living area, course of study and year of study showed that there were significant relationship (<0.05) to knowledge and practice of immunization. These findings showed that the allied health science students are still lacking in knowledge and practice on immunization, and need to be included in their course content.

Keywords : Immunization, Immunity, Students, Knowledge, Practice.

SYSTEMATIC TRANSLATION AND CULTURAL ADAPTATION PROCESSES FOR MALAYSIAN VERSION OF BRISTOL COPD KNOWLEDGE QUESTIONNAIRE (M-BCKQ)

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Abstract

The Bristol COPD Knowledge Questionnaire (BCKQ) was developed to measure knowledge of chronic obstructive pulmonary disease (COPD) among COPD patients. BCKQ possessed a total of 65 items covering 13 topics namely epidemiology and physiology, aetiology, common symptoms, breathlessness, phlegm, chest infections, exercise, smoking, immunisation, inhaled bronchodilators, antibiotics, oral steroids and inhaled steroids. To the best knowledge, this study of translating English to Malay version of BCKQ was first to be done and published from Malaysia. The aim of this study was to describe the systematic processes for translating the questionnaire from English to *Bahasa Malaysia*. Permission was obtained from the corresponding author. English version of BCKQ (E-BCKQ) was translated into *Bahasa Malaysia* according to the widely recommended international standard translational guidelines. The processes began with forward translation (2 independent translators), reconciliation, back translation (2 independent translators), back translation review, cognitive debriefing, harmonisation, testing of translated questionnaire, proofreading and finalisation. Four independent Malay translators that fluent in English and *Bahasa Malaysia* were involved in the process. A team consisted of senior healthcare professionals and researchers had assisted in reviewing the new translated questionnaire. Majority of the M-BCKQ items were experiencing, conceptually and semantically equivalence between original English and translated Malay. However, during pilot study, there were few words or terms that need further explanation to be given to the respondents including *berdehit, tiub bronkial, dehidrasi, bronkodilator, eksaserbasi, terapi gentian nikotin, vaksin influenza, vaksin pneumokokal, spacer* and *kerintangan bakteria*. Those words or terms were agreed by the Translation Committee to be used in this questionnaire in view to the nature of this study which was mainly focusing on knowledge of COPD. Assistance by researcher in completing the questionnaire can improve respondents' understanding and uniformity of the answer. The systematic translation processes were able to reduce the linguistic discrepancies between the English language and *Bahasa Malaysia* in order to promote equivalence and culturally adapted M-BCKQ.

Keywords: Bristol COPD Knowledge Questionnaire, Chronic Obstructive Pulmonary Disease

HYPERKALAEMIA MANAGEMENT AMONG HOSPITALISED PATIENTS IN HOSPITAL PUTRAJAYA

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Abstract

Hyperkalemia represents one of the most important acute electrolyte abnormalities. It is of major concern due to its potential for causing life-threatening arrhythmias. Although hyperkalemia is easily diagnosed, awareness is required after treatment to guarantee that a recurrence will be instantly perceived and treated. This prospective cross-sectional study was designed to evaluate the current management of hyperkalemia among hospitalised patients. This study conveniently sampled 40 patients who were admitted to general medical ward at Hospital Putrajaya between July and August 2016 and had experienced at least one episode of hyperkalemia. Data was retrieved from online medical records of Hospital Putrajaya. Hyperkalemia episodes were observed in patients with a mean age of 57.75 (\pm 2.39) years old. The majority of patients were Malay (70.0%), male (62.5%) and the hyperkalemia episodes were mostly mild in nature (62.5%). The risk factors independently associated with mild hyperkalemia was in patients prescribed with nonsteroidal anti-inflammatory drugs ($p = 0.027$, OR = 15.608, 95% CI: 1.365 - 78.43) and potassium supplement ($p = 0.038$, OR= 7.227, 95% CI: 1.110 - 47.008) respectively. The majority of hyperkalemia episodes were managed with combination therapy of lytic cocktail and sodium polystyrene sulfonate. The types of hyperkalemia management was found to be statistically significantly associated with the severity of hyperkalemia ($p = 0.0302$). Most of the hyperkalemia episodes among the studied patients were managed in accordance to recommendations by Sarawak handbook of Medical Emergencies, 2011 (Malaysia) (95.0%). The mean length of hospital stay was shorter in mild episodes (6.88 days), when compared to moderate episodes (7.10 days) and severe episodes (7.80 days). Although adherence to treatment protocol by local guidelines was high, the current protocol only describes briefly on acute management in patients. There is a need to produce more comprehensive guidelines on management of hyperkalemia. Further education sessions are necessary to increase healthcare professionals' awareness on optimal management of hyperkalemia.

Keywords: hyperkalemia, management, hospitalised, patients.

MEDICATION NON-ADHERENCE AMONG RURAL POPULATION OF MALAYSIA**NAGESWARI NATCHIMUTHU, MOHAMED MANSOR MANAN, HAZIAN MOHD NOR**

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Abstract

Non-adherence is a non-persistence which means that patients take the decision to stop medications after starting it, without any instruction from a health professional. This issue of non-adherence is closely related to medications for chronic conditions which may lead to treatment failure. This study aim is to determine the magnitude of non-adherence and examine the contributing factors among the rural population. This survey is a questionnaire based study for patients diagnosed with chronic diseases such as diabetes, hypertension, heart diseases, hyperlipidemia and kidney dysfunction. The site is in Kampong Pasoh, Jelebu Negeri Sembilan and the patients were conveniently sampled. The questionnaire is self-administered by the respondents and help is given by the researcher if there is any issue that needs further clarifications. The questionnaire content was on patient demographic, level of adherence and factors contributing to non-adherence. The score on answers on knowledge and perception were calculated in terms of frequency and presented descriptively. A total of 80 respondents consented and completed the survey. 31.3% of them were high adherence, 16.3% medium adherence and 52.5% had low adherence. Factors associated with non-adherence were financial constraints, poor knowledge of medications, missing medication regularly, failure to comply with doctor appointment and lack of awareness about the effect of failing to adhere to instruction. The findings showed that non-adherence is a critical issue for the rural population. Healthcare professionals should realize that more monitoring need to be conducted on this population and to find ways to solve the above issues.

Keywords: Medication, Non-adherence, Rural, Malaysia

A SURVEY OF KNOWLEDGE AND PERCEPTION OF NSAIDS AMONG SELF-MEDICATED CONSUMERS AT A COMMUNITY PHARMACY

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Abstract

The uncontrolled use of NSAIDs can lead to many untoward adverse side-effects such as gastrointestinal bleeding, acute kidney injury and cardiovascular associated complications. Since NSAIDs can be easily available at the community pharmacy, this study objective is to assess the knowledge and perception on NSAIDs self-medication and its use among consumers at a community pharmacy. This survey utilizes a validated questionnaire by Sulaiman et al 2012 and was self-administered by clients of a community pharmacy in Cempaka, Nilai Negeri Sembilan. Selection of participants were by convenient sampling complying to the defined inclusion criteria. The period of study was from April until May 2017. The score for knowledge and perception were calculated in terms of frequency and presented descriptively. A total of 80 respondents completed the questionnaire of which 58.8% (47) were females and 41.2% (33) were males. There were eight types of NSAIDs that were commonly used. The five highest NSAIDs consumed were celebrex (aspirin (12.4%), Ibuprofen (10.8%), naproxen (10.8%) and aspirin (10%). In terms of knowledge, fifty four participants (67.5%) had moderate knowledge, sixteen (20%) had good knowledge while twenty-one (26.3%) had poor knowledge. From the aspect of perception, fifty (62.5%) had poor perception on NSAIDs use, twenty (26.2%) had moderate and nine (11.3%) had good perception. The significant demographical variables associated with knowledge were ethnicity, education status and the frequency of pharmacy visits for the past two months. However, there was no significant demographical characteristic that is associated with the level of perceptions. The findings showed that most of the respondents were unaware on the proper use of NSAIDs and had moderate knowledge on NSAIDs. Similarly, their poor perception of NSAIDs use can lead to the occurrences of adverse side-effects if not monitored.

Keywords: Self-medicate, NSAIDs, Knowledge, Perception

IMPACT OF SLIDING SCALE INSULIN ON GLUCOSE VARIATION (GV) DYNAMICS IN CRITICALLY ILL PATIENTS: INVESTIGATION OF 24 HOURS BLOOD GLUCOSE PARAMETERS TO MONITOR GV VARIATION

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Abstract

Studies have shown that acute derangement of blood glucose (BG) control leading to increment in glucose variability (GV) in critically ill patients is observed frequently within 24 hours of intensive care unit. Continuous measurement of BG variation in critically ill patients may be important because poor prognosis may directly or indirectly confer a predisposition to complications such as severe infections, polyneuropathy, multiple-organ failure and mortality. This study aimed to assess the monitoring of 24 hours parameters of GV post-sliding scale intravenous insulin (SSI) therapy in diabetes mellitus (DM) and non-diabetes mellitus (NDM) patients in ICU setting. This study was conducted as a retrospective, single-centre cross-sectional study at general ICU of Hospital Selayang between Jan 2014 to August 2016 (32 months). Five tested monitoring parameters for GV were standard deviation (SD), coefficient of variation (CV), glycemic liability index (GLI), mean absolute glucose (MAG) and mean amplitude of glycemic excursions (MAGE), analysed using EasyGV calculation module. Out of 350 patients, only 50 patients (30 DM and 20 NDM) were eligible for this study. Four out of five GV monitoring parameters (CV, GLI, MAG, MAGE) showed statistically significant GV after initiating SSI in NDM patients compared to DM patients ($p < 0.05$). The results were consistent with mean utilization of insulin for NDM ($57.867 \pm (6.664)$) compared to DM patients ($55.400 \pm (5.514)$) supported by higher mean arterial BG for NDM ($10.927 \text{ mmol/L} \pm (0.787)$). Study also found positive correlation upon GV parameter and admission RBS compared to HbA1C. Individualization of BG dynamics in SSI therapy between critically ill NDM and DM is the first step taken by clinicians nationwide but daily use of GV parameters as part of BG monitoring in ICU setting can be explored further for the benefits of patient's outcome.

Keywords: glucose variability, random blood glucose, intensive care unit, diabetic.

AWARENESS ON MENOPAUSE AND HORMONE REPLACEMENT THERAPY AMONG WOMEN IN NILAI, MALAYSIA

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Abstract

The clinical symptoms of menopause such as sleep disturbances, mood swing, hot flashes, and vaginal dryness has led to the use HRT in menopausal woman. HRT and its effectiveness have been extensively studied. This study however aim to examine the knowledge and perception on HRT at a local context by focusing on women at Nilai, Negeri Sembilan. The method of study was a questionnaire driven survey which was validated by Syed Alwi et al 2015. The questionnaire consisted of three parts. Part 1 content is mainly of respondent's demographical characteristics while part 2 and 3 are questions on knowledge and perception. The score on answers on knowledge and perception were calculated in terms of frequency and presented descriptively. The study period was from April until May 2017. A total of 70 respondents completed the questionnaire. Their age range was between 20 to 60 years and twenty-nine (41.4%) of the participants aged more than 40 years old. 60% (42) were Malay, eighteen (25.7%) were Indian and ten (14.3%) were Chinese. The findings showed that 48.6% (34) had moderate knowledge and 65.7% (47) had positive perception towards menopause. In terms of HRT therapy, 75.7% had positive perception and 64.3% had moderate knowledge. Knowledge on the symptoms of menopause were high and they had no worries on the periods and the need of care about contraception. Overall knowledge and perception on HRT were high.

Keywords: Menopause, HRT, Knowledge, Perception

SELF-MEDICATION PRACTICES AMONG ALLIED HEALTH SCIENCE UNDERGRADUATE STUDENTS IN KPJ HEALTHCARE UNIVERSITY COLLEGE

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Abstract

Self-medication practice is common in both developed and developing countries. Allied Health Sciences students in KPJ Healthcare University College (KPJUC) similarly are exposed to self-medication practices in which many have little or no knowledge on the medications they are taking. Based on this reason this study is undertaken to examine the prevalence of self-medication at KPJUC among these students. This was a survey using a validated self-administered questionnaire. The period of study was from March until May 2017. Respondents were selected using the convenient method. Only completely filled questionnaires and respondents that met the inclusion criteria were selected. A total of 93 students were involved in this study. 79 (84.9%) and 14 (15.1%) were female and male respectively. The prevalence of self-medication of KPJUC allied health sciences students were 77.5%. The self-medication practices were not associated with their demographical characteristics such as age, gender, race, program of study and year of study. Analgesics (71.0%) and antihistamine (62.4%) were the two main medications that students self-medicate. The two most conditions for self-medicate were headache (91.4%), cough and common cold (89.2%). Three major reasons to self-medicate were the mild diseases (73.1%), time saved from going to see the doctor (67.7%) and more economical (64.5%). The findings found self-medicate is a common practice among KPJUC students. These practices need to be monitored and education on the appropriate self-medication need to be initiated by the university.

Keywords: Prevalence, self-medication, students

RISK PERCEPTION OF PRESCRIBED DRUGS IN PREGNANCY AMONG MALAYSIAN PRIVATE PRIMARY HEALTHCARE PROFESSIONALS

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Abstract

Apposite risk perception of drugs use in pregnancy by healthcare professionals is vital for pregnant women to receive optimum health outcomes during their prenatal period. The study aimed to determine the perception risk level to prescribed drugs for pregnant mothers after reading ten blinded drug labels, and its attributable parameters among private primary healthcare professionals. In this cross-sectional study, self-administered questionnaires (Rasch model item reliability = 0.95) were disseminated among 56 healthcare professionals working in private clinics and community pharmacies (general practitioners, n = 40; community pharmacists, n = 16), enrolled via purposive sampling in Perlis, Malaysia, between February to March 2017. Selected 10 blinded drug descriptions taken out from product information leaflet of pregnancy section were labelled as drug A, drug B, drug C, drug D, drug E, drug F, drug G, drug H, drug I, and drug J (paracetamol, lamotrigine, isotretinoin, metoclopramide, phenytoin, propranolol, budesonide nasal spray, metformin, cetirizine, and ciprofloxacin, respectively). For each drug, 1 mark given for the correct answer (selection of answers: 'in all circumstances', 'rather yes', 'rather no', 'under no circumstances'), that summed up to 10 marks. Using SPSS version 23, Mann Whitney U, Kruskal Wallis, Chi square and Spearman correlation tests were used to assess the differences, association and correlation between the independent (gender, age, profession, years of experience) and dependents variables respectively. The mean (\pm SD) prescribing risk perception score was 3.84 (\pm 0.75) with majority of respondents (n = 38; 67.9%) possessed intermediate prescribing risk perception level (score: 4 - 6) while none at high level (low level (score \leq 3): n = 18; 32.1%). There was no significant difference, association and correlation between variables reported in this study. Recruited Malaysian private primary healthcare professionals possessed borderline intermediate prescribing risk perception level that is unaffected by selected independent variables.

Keywords : Risk perception, drugs in pregnancy

PREVALENCE OF NON-SMALL CELL LUNG CANCER ON CHEMOTHERAPY IN HOSPITAL KUALA LUMPUR, MALAYSIA: A DESCRIPTIVE STUDY

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Abstract

Lung cancer is a malignant tumor of the lungs, usually in the cells lining air passages. Non-small cell lung cancer (NSCLC) is more frequent (80 % to 85 %) of all lung cancer cases. The present study was undertaken to report the prevalence of NSCLC on chemotherapy in Hospital Kuala Lumpur (HKL), the largest tertiary care public hospital in Malaysia, between January 1, 2009 to 31 December, 2012. A retrospective cohort study using purposive sampling method was carried out from September 2014 to January 2015 involving review of 163 adult NSCLC patients on chemotherapy (≥ 18 years old) at the Department of Oncology and Radiotherapy, HKL, using a self-designed data abstraction form. Data were analysed using SPSS[®] version 21. The overall mean (\pm SD) age of enrolled patients was 56.7 (\pm 10.1) years old. Majority of the patients were male ($n = 112/163$; 68.7 %). In terms of ethnicity, the majority of the patients were Chinese ($n = 78$; 47.9 %) followed by Malay ($n = 76$; 46.6 %). There were 123 patients (75.5 %) had adenocarcinoma (AC) and 40 (24.5 %) had squamous cell carcinoma (SCC). Many patients had stage IV NSCLC ($n = 106$; 65.0 %), were non-smokers ($n = 61$; 37.4 %) and had ECOG Performance Status (PS) score of 2 ($n = 67$; 41.1 %). The epidermal growth factor receptor (EGFR) status was not performed among 70 (43.0 %) patients. Besides lungs ($n = 146$; 89.6%), other metastasised sites of the body were bone ($n = 40$, 24.5 %), brain ($n = 35$; 21.5 %), liver ($n = 25$; 15.3 %) and adrenal ($n = 15$; 9.2 %). The management of NSCLC is challenging with the passage of time due to its increased prevalence and progressive nature of the disease. NSCLC diagnosed at later stage increases the treatment cost and therefore reduces the chances of survival.

Keywords: Non-small cell lung cancer, metastasis, Hospital Kuala Lumpur

EVALUATION OF TOTAL TANNIN CONTENT AND ANTHELMINTIC ACTIVITY OF *IPOMOEA AQUATICA*

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Abstract

Traditional medicines are widely used for the treatment of various diseases of human and animals worldwide. The present study was aimed to determine the total tannin content and to scientifically assess the anthelmintic activity of aerial parts of *Ipomoea aquatica* (family: Convolvulaceae) against earthworms, *Pheretima posthuma*. Water and methanol extracts of *I. aquatica* were obtained by cold maceration method and subjected to preliminary phytoconstituent screening. The total tannin content was determined by Folin-Ciocalteu reagent method. Three concentrations (25 mg/ml, 50 mg/ml and 100mg/ml) of water and methanol extracts of *I. aquatica* were prepared and the time to paralyze and time to death of the worms, *P. posthuma* were observed and compared with the standard drug, Mebendazole (100 mg/ml). The total tannin content present in both the extracts was ranged from 3.025 – 6.184 gmper kg of dried crude drug. High quantity of total tannin content was observed in water extract than methanol extract. Both extracts at a concentration of 100mg/ml exhibited an effective anthelmintic activity that might be due to the presence of tannins in water and methanol extracts. It has been observed that methanol extract elicited a higher anthelmintic activity than water extract. This may be due to the interference of flavonoids that present in methanol extract of *Ipomoea aquatica*. The present study proposes further research to isolate the anthelmintic bioactive compounds and their standardization to develop the novel herbal anthelmintic agent.

Keywords: *Ipomoea aquatica*, *Pheretima posthuma*, anthelmintic activity, tannin content

ANTIHYPERGLYCEMIC ACTIVITY OF *DERRIS ELLIPTICA* IN STREPTOZOCIN INDUCED DIABETIC RATS

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Abstract

Derris elliptica is a medicinal plant from the fabaceae family, a species of leguminous plant locally known as 'akar tuba'. This study aims to investigate the anti-diabetic activity of *Derris elliptica* methanol leaves extract (DEME) on streptozocin (STZ) induced diabetic *Sprague dawley* rats. Acute toxicity studies were assessed by 2g/kg body weight (bwt) in normal rats. The anti-diabetic activities were investigated in STZ (45mg/kg) intraperitoneally induced rats. Diabetic rats were orally administered with standard drug Glibenclamide (10mg/kg bwt), DEME (200mg/kg bwt and 400mg/kg bwt) for 14 days. Blood glucose, body weight, biochemistry parameter and histology of pancreas, liver and kidney were observed. No toxicity or mortality was observed. A significantly increase in body weight ($p < 0.001$) and decrease in hyperglycemic level ($p < 0.001$) with treated groups. After 14 days, serum insulin in treated group of animals showed significant increased ($p < 0.05$). Administration of both DEME doses significantly reduced aspartate aminotransferase ($p < 0.001$), alanine aminotransferase ($p < 0.05$), lactic acid dehydrogenase ($p < 0.05$), total protein ($p < 0.05$), total bilirubin ($p < 0.05$) while high density total cholesterol increased significantly ($p < 0.001$). The histological results of the treated group with DEME showed improvement compared to negative control rats. The results further demonstrated that regeneration and restoration is one of its anti-diabetic mechanisms including normal kidney and liver functions. This may be due to its antihyperglycaemic activity by up-regulation of insulin secretion in STZ induced diabetic rats. Thus, DEME could be a promising therapeutic agent for the management of diabetes mellitus.

Keywords: Antihyperglycemic, *Derris elliptica*, streptozocin

PHYTOCHEMICAL STUDY OF *Centella Asiatica***SUHAIL BIN SALIM¹, NOOR ANILIZAWATIMA BT SULONG¹, HUMERA NAZ^{1*}****¹Department of Pharmacology and Chemistry, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia. Email: humera@salman.uitm.edu.my****Abstract**

Centella asiatica L. is commonly known for its medicinal and nutritional values throughout the world. Numerous studies proved the therapeutic effects of this plant including wound healing, antibacterial, antidiabetic and anti-inflammatory properties. The medicinal values of this plant were mainly attributed to the presence of several triterpenes, namely asiatic acid, madecassic acid, asiaticoside and madecassoside. The concentration of phytochemicals was found higher in the leaves compared to the roots and petioles. The aim of this study was to investigate the secondary metabolites of *C. asiatica*. Fresh plants of *C. asiatica* were extracted with methanol. The methanolic extract was subjected to thin layer and high performance chromatograph to study the phytochemical constituents of this plant.

Keywords : *Centella asiatica*, Apiaceae, triterpenes, TLC, HPLC

SYNTHESIS AND ANTIMICROBIAL EVALUATION OF PRENYLATED INDOLE DERIVATIVE**V.V.S.S. APPALA RAJU^{1*}, GOPAL NATESAN¹, SHERYAR AFZAL², TAN HUI MIN¹**¹ Department of Medicinal Chemistry, Faculty of Pharmacy, MAHSA University, Malaysia. ² Department of Scientific Basis of Therapeutics, Faculty of Pharmacy, MAHSA University, Malaysia. Email: saiappala@mahsa.edu.my**Abstract**

Development and discovery of newly broad spectrum of antimicrobial agents play an essential role in order to overcome the emergence of antimicrobial resistance. Indole ring possess a variety of pharmacological and biological activities such as antimicrobial and anticonvulsant activities. The aim of this study is to synthesise, characterise and evaluate the antimicrobial activity of prenylated indole derivative. Indole derivatives have been synthesised by using acylation method. The prenylated indole derivatives were synthesised by using phosphomolybdic acid coated with silica as an effective catalyst at room temperature or under reflux. Besides, addition of prenyl group into indole derivatives can improve the antimicrobial activity. Synthesised prenylated indole derivative was evaluated for antimicrobial activity by using agar-well diffusion method. The prenylated indole derivative exhibited antimicrobial activity against *Pseudomonas aeruginosa*. It showed significant result at concentration of 2.5 mg/mL, 5.0 mg/mL and 10.0 mg/mL.

Keywords :Indole, prenylation, antimicrobial, phosphomolybdic acid, agar-well diffusion method

PHYTOCHEMICAL INVESTIGATION AND EVALUATION OF ANTIMICROBIAL ACTIVITY OF DIFFERENT EXTRACTS OF *Gardenia Carinata* LEAVES

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Abstract

The plant *Gardenia carinata* belongs to the family Rubiaceae. It is a native plant to Penang and Kedah Malaysia, commonly known as Golden Gardenia or Kedah Gardenia. The plant possesses therapeutic potential which includes anti-HIV, anti-topoisomerase, anti-cancer and cytotoxic. The main objectives of the study are to determine phytochemical composition, MIC breakpoint and antimicrobial activity of three different extract of *Gardenia carinata* against six microorganisms. The test organism used are *Streptococcus sanguines*, *Streptococcus salivarius*, *Streptococcus pneumoniae*, *Salmonella typhi*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. Different concentrations of plant extracts were tested against each type of microorganism by agar diffusion method. The dried leaves were extracted by Soxhlet extraction process using petroleum ether, dichloromethane and methanol. Two-fold serial dilution method was used to determine the MIC. The MIC zone of inhibition showed range from 0.63 to 1.25 mg/mL. The plant extracts have lower MIC against Gram-positive bacteria than Gram-negative bacteria. Methanol extract showed highest zone of inhibition. Extracts of *Gardenia carinata* showed broad spectrum antibacterial activity in comparison with standard Tetracycline. All the extracts of the highest concentration (20 mg/mL) has the highest zone of inhibition while the lowest concentration (5 mg/mL) has the lowest zone of inhibition. The most susceptible bacteria were *Salmonella typhi*, *Streptococcus pneumoniae* and *Klebsiella pneumoniae*. Antibacterial screening with all three organic extracts showed significant ($p < 0.05$) zone of inhibition. The phytochemical analysis revealed the presence of flavonoid, terpenoid, saponin, tannin, C-glycoside, phenol, carbohydrates, protein, oil and fats. The presence of these compounds possibly being responsible for the antimicrobial activity. In conclusion, the leaves extracts of *Gardenia carinata* has potential to be used as an alternative therapeutic agent against certain microorganism in future drug development.

Keywords: *Gardenia carinata*; Soxhlet extraction, antimicrobial activity, minimum inhibitory concentration

AN ANALYSIS OF CONSUMER ACCEPTANCE TO A PEEL-OFF MASK GEL FORMULATION USING SNAIL MUCUS (*Achatina fulica*) AS MOISTURIZER

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Abstract

Nowadays in society, the demand for peel-off mask gel has been increasing since it improves the skin quality. To be highly acknowledged by the market and to increase consumers acceptance, the product has to be innovative and in a good formulation. One remarkable innovation using allantoin in snail mucus (*Achatina fulica*) as the moisturizing agent in peel-off mask gel. Previous studies have been conducted using a factorial design application as a focus, including two best peel-off mask gel formulations with different dosage formulation: F1 (PVA 14,5% and CMC-Na 5,25%) and F2 (PVA 15% and CMC-Na 5%). This study particularly aims to determine consumer acceptance of snail mucus (*Achatina fulica*) moisturizing peel-off mask gel formulation. This research was conducted through a questionnaire which consists of two sections. Section 1 consists of socio-demographic data while section 2 consists of consumers' acceptance of the formulations. The survey was conducted in four groups of panelists in the Faculty of Medicine and Health Sciences; medical students, dentistry students, pharmacy students, and nursing students. Data from the questionnaire scoring will be entered and analyzed using SPSS. If the results of SPSS data analysis shows that the significance level is less than 0.05, there is a significant differences of consumers' acceptance.

Keywords :consumer acceptance, peel-off mask gel, snail mucus

OPTIMIZATION OF PVA AND CMC-Na CONCENTRATION ON SNAIL (*Achatina fulica*) MUCOUSPEEL OFF GEL FORMULATION USING FACTORIAL DESIGN METHOD

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Abstract

Dry skin is one of the common skin problems to people who are living in tropical climates. Dry skin on the face can be minimized by using a facial moisturizer. The usage of snail (*Achatina fulica*) mucous which contains allantoin compound that has efficacy as a moisturizer can be used as an alternative to overcome dry skin. The objective of this research is to optimize the formulation of snail mucous peel off gel using CMC-Na and PVA to produce the optimal formula and moisture test. This study is an experimental research and involves formula optimization using factorial design method. Based on previous research, the formula of snail mucous peel off gel formulated were F1 (PVA 15%, CMC-Na 6%), F2 (PVA 10%, CMC-Na 3%), F3 (PVA 15%, CMC-Na 3%), and F4 (PVA 10%, CMC-Na 6%). From these, each formula was re-optimized for physical property parameters such as viscosity, drying speed, spreading potency and stickiness. From these physical properties, each contour plot was made based on good physical properties. Then the contour plot was combined into a super imposed plot which will show the optimal area of optimization. The test of moisture activity was conducted using sin detector RoHs Model 5G-5D with SPSS data analysis. If the T-test shows results that are not significantly different from the factorial design method, so this formula can be regarded as an optimal formula for snail mucous peel off gel.

Keywords: Peel off gel, snail mucous, CMC-Na, PVA

SYNTHESIS, CHARACTERISATION AND CYTOTOXICITY STUDY OF POLY(*N*-ISOPROPYLACRYLAMIDE)-BASED PARTICLES FOR TOPICAL DRUG DELIVERY

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Abstract

The potential of dual-responsive poly(*N*-isopropylacrylamide), PNIPAM-based polymers as carriers for topical drug application is investigated. PNIPAM was copolymerised with acrylic acid (AAc) using the surfactant-free emulsion polymerisation technique. The resulting PNIPAM (PN), PNIPAM-co-AAc 5% (PNA5%) and PNIPAM-co-AAc 10% (PNA10%) were characterised for particle size, zeta potential, temperature- pH-sensitivity, phase transition and stability. The chemical structures of the polymers were confirmed through Fourier infrared spectroscopy, and morphologies were studied using transmission electron microscopy (TEM). The particles were loaded with model permanent caffeine using a post-fabrication technique. Loaded particles were subjected to *in vitro* permeation studies across full-thickness rat skin. The cytotoxicity of the polymers was probed on human skin fibroblast (BJ) cells, *in vitro*. The resulting mean hydrodynamic diameters of the polymers ranged from 600 to 1300 nm with polydispersity index values less than 0.3. The zeta potentials of all polymers were in the range of moderate stability. All particles significantly reduced in size in response to the increase in temperature ($p < 0.005$). PNA5% and PNA10% shrunk as the pH value decreased ($p < 0.001$), while the size of PN was not affected by the pH variation ($p = 0.104$). The phase transitions of all polymers were in the range of 33 to 39°C. The TEM images confirmed particles were successfully synthesised as monodisperse spheres. *In vitro* permeation data demonstrated PNA5% had suppressed the release of caffeine ~4 fold when compared to PN; while the PNA5% with external pH regulator citric acid (CA) exhibited further suppression of caffeine release (~7 fold). For the cytotoxicity of the polymers on BJ cells, PN was found to be not cytotoxic. PNA5% was cytotoxic at all incubation times. However, cell viability increased significantly in the presence of caffeine. Further studies must be carried out to elucidate the release and toxicity mechanisms of the particles.

Keywords :Acrylic acid, poly-*N*-isopropylacrylamide, caffeine, temperature-responsive, pH-responsive

ENDURING RESEARCH INTERESTS ON *HIBISCUS SABDARIFFA* L.**ATHIRAH LATIF¹, IBTISAM ABDUL WAHAB¹ AND HANNIS FADZILLAH MOHSIN¹****Department of Pharmacology & Pharmaceutical Chemistry, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia. Email: ibtislam@puncakalam.uitm.edu.my**

Abstract

The study is focused on the phenolic contents in roselle or *Hibiscus sabdariffa*. Local community pharmacy prescribes this herb as nutraceutical, dental and pharmaceutical products. From the literature, the polyphenolic compounds, e.g. quercetin, kaempferol and apigenin are the main chemical components in *H. sabdariffa*. These phenolics reported to have antihypertensive, antigastric ulcer, antioxidant, antimicrobial and antihyperlipidemia activities. In this investigation, literature review, extraction of the calyces of *H. sabdariffa*, the chromatographic profiling and ultraviolet-visible spectrophotometry analyses were included. In the laboratory work, the colours of *H. sabdariffa* extracts were changed when HCl and NaOH were added. The UV spectra of the *H. sabdariffa* in acidic and basic medium were also observed. The compound's retention factor was calculated, based on the TLC spot. It was found that, the value was comparable with the data from the national herbal monograph. It was suggested that the research sample contains delphinidine-3-sambubioside. Special precautions need to be given, due to low stability of the *H. sabdariffa* extracts. More research needs to be performed, in order to provide updates on *H. sabdariffa*. Publication records demonstrated ongoing attention on this medicinal plant, where light and temperature are continually the concerning experimental parameters.

Keywords :Roselle, extraction, spectroscopy

ISOLATION OF GLUCONONITOL FROM THE *VITEX* POUCH**AMIRAH MOHD ALI¹, AISYAH HASYILA JAHIDIN¹, IBTISAM ABDUL WAHAB¹, HANNIS FADZILLAH MOHSIN¹ AND MIZATON HAZIZUL HASAN¹****Department of Pharmacology & Pharmaceutical Chemistry, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia. Email: ibtisam@puncakalam.uitm.edu.my**

Abstract

The unprecedented extraction of the *Vitex* pouch was performed. The compounds from methanolic and chloroform extracts were isolated *via* silica chromatography. The compound of interest was investigated by using Nuclear Magnetic Resonance spectroscopy. The suggested compound from the methanolic extract, until now, is comparable with the previously reported glucononitol. Nonetheless, more information and understanding on the pharmaceutical and chemical analysis of the *Vitex* species were obtained. It is anticipated that incoming research with advanced technology for this natural product could be continuously explored.

Keywords : *Vitex*, chromatography, extraction, spectroscopy

ACALYPHA, ACTINIDIA AND NEPETA SPECIES AS THE ATTRACTANTS AND FOOD ENRICHMENTS FOR CATS

WAN NORAZLIN WAN YA, WAN RAIDAH WAN MUKHTAR, HANNIS FADZILLAH MOHSIN AND IBTISAM ABDUL WAHAB

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Abstract

The comprehensive role of catnips of *Acalypha*, *Nepeta* and *Actinidia* species, respectively from the families of Euphorbiaceae, Lamiaceae and Actinidiaceae, was reviewed. A collaborative research with microbiologists, zoologists and veterinary scientists was also established, in order to correlate the plants' phytochemical aspects with their functions to animals. The literatures mentioned that *Nepeta* yielded less response within animals, specifically the felines, as compared to *Actinidia*. While, the *Actinidia's* stimulus to other petting animals was not generally known. It is reported that catnips have insect repellent activity against mosquitoes due to the presence of nepetalactone. *Acalypha* and *Nepeta* species are also believed to have antimicrobial activity. In addition, previous research found that *Actinidia* species possessed anti-obesity effect and anti-inflammatory characteristic. In a meantime, the chemical information regarding *Acalypha* plant was only recently published to contain dihydroactinidiolide, another cat stimulant. The methodology included the extraction and thin layer chromatography, as well as screening of the crude extracts. Preparative TLC was also utilised to purify the target molecule. The isolated compounds were then subjected to the NMR spectroscopy. Based on the results, it is found that *Nepeta* sample contained saponin and terpene, while the alkaloids were not observed. The *Actinidia* extract consisted of alkaloid, saponin and terpene. However, the phenolics were absent. The NMR spectrum of the isolated moiety showed the presence of mixture of two or more compounds. Matatabilactone was also expected to be one of the metabolites from the *Actinidia* sample. Unfortunately, the target compound which comprised of nepetalactone, could not be detected. On the other hand, it is suggested that a structure for an iridoid precursor for nepetalactone, i.e. 1-isopropyl-2,3-dimethylcyclopentane, could be established. In future research, other analytical techniques such as column chromatography can be performed to obtain better result for separating the constituents. In conclusion, this finding is in parallel with a publication, which brought up the point that, *Acalypha*, *Actinidia* and *Nepeta* are the natural sources worth to be further investigated.

Keywords :Extraction, catnips, spectroscopy

PROCESS OPTIMISATION OF THE SYNTHESIS OF CHITOSAN NANOPARTICLES FOR CAFFEINE DELIVERY

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Abstract

Chitosan nanoparticles have been widely investigated as drug carriers; with the potential to improve bioavailability of drugs in the skin, enhanced efficacy, and the ability to achieve sustained drug release. In this study, we investigated the effects of stirring speed, stirring time and ultra-sonication time on the size, zeta potential and PDI of the resulting caffeine-loaded chitosan nanoparticles. It was found that the particle size of chitosan nanoparticles decreased from 617.43 nm to 411.27 nm as the speed of stirring was increased from 300 rpm to 700 rpm at a constant time of stirring. The PDI and zeta potential were also increased with increasing stirring speed, but the changes were not significant. The stirring time revealed a decrease in the mean particle size from approximately 421.60 to 319.30 nm, when stirring time was increased from 15 to 60 minutes. Finally, a linear decrease in the average particle diameter of chitosan nanoparticles was observed with increasing sonication time. In conclusion, process parameters appeared to exert a significant influence on the mean particle size, zeta potential and size distribution index of caffeine-loaded chitosan nanoparticles. The controlling parameters are identified in this present study in order to produce caffeine-loaded chitosan nanoparticles with optimal characteristics.

Keywords: chitosan, caffeine, nanoparticles, drug delivery

DISSOLUTION IMPROVEMENT OF LOVASTATIN IN ARGININE AS CO-SOLUTE**NUR FARAHANI ZOLKIFLEE¹, MEOR MOHD REDZUAN MEOR MOHD AFFANDI^{1*}, ABU BAKAR ABDUL MAJEED²**¹Department of Pharmaceutics, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia. ²

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Abstract

Lovastatin (LVS), a previously popular drug of choice in primary and secondary hyperlipidemias with raised low-density lipoprotein (LDL) and total cholesterol levels are currently gaining importance in other various applications. For examples, as potential therapeutic agents for treatments of various types of tumours, regulating inflammation, immune response, and coagulation processes. Due to those potentials, studies on aqueous solubility enhancement of LVS has been widely carried out. The study presented here aims to enhance the solubility of LVS by using arginine (ARG) as a co-solute. A phase solubility study was conducted. Among seven concentrations of ARG studied, the highest amount of LVS was found in SD7 (0.8 mol/dm³). Besides, by comparing SD7 with the intrinsic solubility data, the solubility of LVS was enhanced by a maximum of 28-fold. Therefore, the addition of ARG as a co-solute was proven to increase the aqueous solubility of LVS.

Keywords :lovastatin, arginine, solute-solvent interactions, thermodynamics

PREPARATION AND EVALUATION OF ALBENDAZOLE PASTILLES FOR PAEDIATRIC USE**ABDULLAH KHAN^{1*}, KOWSLYA MUTHIAH¹, K.ANANDARAJAGOPAL¹****School of Pharmacy, KPJ Healthcare University College, Persiaran Seriemas, Kota Seriemas, Nilai 71800, Negeri Sembilan, Malaysia. Email: abdullahkhan@kpjuc.edu.my****Abstract**

The main objective of developing a dosage form is to ensure the ease of administration and safe delivery of drugs to achieve desired therapeutic effects. Formulation of dosage forms suitable for paediatrics and geriatric patients remains as one of the major areas of concern for pharmaceutical professionals. Albendazole, is a commonly used anthelmintic drug administered orally in all age groups. Pastilles are believed to ease the administration of drug in paediatric and geriatric patients and improve compliance on the aspect of acceptability and ease of administration. The present study was aimed to formulate and evaluate Albendazole pastilles using gelatin as binder. The pastilles were prepared by melt and mould technique. The formulations were subjected to physicochemical evaluation such as weight variation, thickness, content uniformity, disintegration and *in-vitro* dissolution. The thickness of the optimized formulation was found to be 0.8mm and weight variation was within the limit of average weight $\pm 10\%$. The disintegration time for formulated pastilles increased with the increased amount of gelatin. The lowest disintegration time (50 seconds) was shown by F1 containing 5% gelatin at and the highest disintegration time (80 seconds) was shown by F3 containing 10% of gelatin. Drug content of prepared pastilles was found to be $97 \pm 0.3\%$. The results of the dissolution rate suggest the influence of gelatin concentration on drug release. However, the difference was very small and it may be attributed to increased binding property with the increase in gelatin concentration which is also evident from the disintegration test. Formulation F1 containing 5% gelatin showed 85% drug release within 20 minutes followed by F2 containing 7.5% gelatin and F3 containing 10% gelatin at 25 minutes. From the studies it is concluded that albendazole pastilles will be a better alternative to conventional oral dosage forms. However, large scale production and stability studies are required to produce at commercial scale.

Keywords: Pastilles Albendazole, gelatin, disintegration, dissolution

POST TRANSLATIONAL OF UBIQUITIN CONJUGATING ENZYME, Ube2J1**NUR SABIHA MD HUSSIN^{1*}, EION FLEMING¹****School of Biochemistry and Cell Biology, Bioscience Institute, College Road, Cork, Ireland****Email: nursabihamdhussein@gmail.com****Abstract**

Ubc6e is a protein from the strain *Saccharomyces cerevisiae* which is a homologue of the human ubiquitin-conjugating enzyme, Ube2J1. Ube2J1 involves in the degradation of misfolded proteins in the endoplasmic reticulum (ER) lumen via the ubiquitin-proteasome system. Ube2J1 is phosphorylated at least at one site, in which the previous study has identified S184 is targeted by p38 mitogen-activated protein kinase (MAPK) under cytosolic response. The site S184 also shown to fit with the p38MAPK. Study has shown that there is another novel phosphorylatable site in the Ube2J1 S184A which undergo post-translational modification after a treatment with phorbol 12-myristate 13-acetate (PMA). PMA was known to activate intracellular pathways including protein kinase C (PKC), c-Jun N-terminal kinases (JNK), p38MAPK and components in the Ras signalling pathway. From the result of PMA activation and the effect of expression of phosphorylated Ube2J1 with the mutation at S184A, it is hypothesised that Ras signalling may have played an effect in regulating the Ube2J1 at the novel phosphorylatable site. One residue at S266 in the Ube2J1 has the highest chance to get phosphorylated due to its position in the protein which can fit the consensus motif of the Ras component kinases. In this study, we try to identify whether S266 is the novel site for phosphorylation. The results suggest that there are few possible putative phosphorylatable sites in the Ube2J1. However, the sites have not yet been found to indicate the novel site for phosphorylation.

Keywords: UPR, Ube2J1, Endoplasmic Reticulum associated Degradation (ERAD), Ubc6e (Ube2J1)

USE OF CHITOSAN NANOPARTICLES FOR THE DELIVERY OF HYDROPHILIC WHITENING AGENTS

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Abstract

Purpose. To investigate the use of chitosan nanoparticles (CS-TPP-NPs) as a carrier for arbutin. **Methods.** In this study, arbutin loaded CS-TPP-NPs were prepared via the ionic cross-linking of CS and TPP and were characterised physicochemically (particle size, zeta potential and dispersity index). The effect of various concentrations (0.1, 0.2, 0.4, 0.5, and 0.6% w/v) of arbutin on the entrapment efficiency and loading capacity was also investigated. **Results.** Data obtained clearly identified the use of CS-TPP-NPs as a carrier for the delivery of arbutin. The average size obtained for the nanoparticles ranges from 196-274 nm as the concentration of arbutin was increased. The PDI value for all nanoparticles remained between 0.2-0.3 while the zeta potential was increased from 41.6 to 52.1 mV. The optimum encapsulation efficiency (79.6%) and loading capacity (86%) was found with chitosan nanoparticles containing 0.4% arbutin. **Conclusions.** The present study describes the successful preparation of chitosan nanoparticles with optimal physicochemical characteristics as a carrier system for arbutin, which we anticipate to be able to improve its delivery through the skin, hence improved its efficacy as a whitening agent.

Keywords: chitosan nanoparticles; Arbutin; whitening agent; topical delivery

SELF NANO EMULSIFYING DRUG DELIVERY SYSTEM CONTAINING KARAMUNTING (*Rhodomyrtus tomentosa* (Ait.) Hassk) EXTRACT LEAF AS ANTIDIABETIC THERAPY**NILAM PERMATASARI¹, PURI PARAMITA WULANDARI¹, RISMANADA JULIA PUTRI¹, BAMBANG HERNAWAN NUGROHO., M.SC,APT¹**¹ Faculty of Mathematics and Sciences, Department of Pharmacy, Universitas Islam Indonesia, Yogyakarta, Indonesia.
Email:15613112@students.uii.ac.id**Abstract**

Indonesia has abundant biodiversity rich in plants developed as medicinal plants. One of the traditional medicinal uses as an antidiabetic is the karamunting leaf. Karamunting leaf contains flavonoid compounds that have antioxidant activity as anti-diabetes. Antioxidants in the leaves karamunting able to bind free radicals that can reduce oxidative stress. Reduced oxidative stress can reduce insulin resistance that prevents the development of dysfunction and prevents pancreatic β cell damage. However, in the flavonoid compound is less soluble in water so that the purpose of research for the development of self-emulsifying drumming formulations of the extract of a caramunting leaf (*Rhodomyrtus tomentosa* (Ait.) Hassk) as antidiabetes which provide the latest modifications to improve the effectiveness at the time of use, so as to improve the bioavailability of active substances in the body. The evaluation methods used for the Self Nano Emulsification Drug Delivery System (SNEDDS) include solubility, organoleptic, particle size, and PI. In the NU Emulsification Drug Delivery System (SNEDDS) dosage formulations use 90 capryol oil, VCO and olive oil. The main results of the best oil screening are capryol 90, tween 20 as surfactant and PEG 400 as cosurfactant. The results obtained in the sample are particle size between 10.7 nm - 11.6 nm, and PI values between 0.158 \bar{D} -0.473 \bar{D} . The results show good chemical physics, good solubility properties in water and good organoleptic as a self-contained Self Nano Emulsifying Drug Delivery System (SNEDDS).

Keyword: karamunting leaf,SNEDDS,antidiabetic

ANDROGRAPHOLIDE-LOADED PLGA FOR TRANSDERMAL DELIVERY: PERMEABILITY ACROSS STRAT-M MEMBRANE IN VITRO

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Abstract

Andrographolide is a major bioactive component of Sambiloto (*Andrographis paniculata* (Burm F.) Ness) which has an anti-inflammatory effect. Andrographolide is a lipophilic compound with log P of $2,632 \pm 0.135$ and has low water solubility. Transdermal drug delivery system with PLGA (poly lactic-co-glycolic acid) polymers and PVA (polyvinyl alcohol) can improve the bioavailability and control the release of andrographolide to achieve the therapeutic effect and also can avoid the bitter taste of andrographolide. The aims of this study was to observe the effect of variation of PVA concentrations to the release profile and permeation characteristic of the PLGA nanopolymer formulation as the carrier of andrographolide through Strat-M membrane, and to determine the kinetics of transport of andrographolide using the WinSAAM software. PLGA nanopolymer formulation has been made using solvent evaporation method with variation of PVA (%b/v) is 1%, 2,5%, 5% and also without the addition of PVA as the comparison. The *in vitro* permeation study was done using Strat-M membrane on a vertical type of Franz diffusion cell with phosphate buffer pH 7.4 as the medium. The concentration of andrographolide in receptor compartment has been determined using High Performance Liquid Chromatography (HPLC) in 224 nm with an isocratic mixture of methanol and water at ratio of 67:33 v/v as the mobile phase. The amount results of drug release with concentration of PVA is 1%; 2,5%; and 5% in 24 hours was $3.34774 \mu\text{g} / \text{cm}^2$, $2.3369 \mu\text{g} / \text{cm}^2$, $0.2306 \mu\text{g} / \text{cm}^2$. Formula without the addition of PVA has no amount of drug release. The predicted results using WinSAAM software (Windows based Simulation Analysis and Modeling) showed that andrographolide has three compartments in drug release. The compartments model indicated the potential of andrographolide which can be transported with the rate following on the first order that will be absorbed from the skin surface to the membrane then flow to the bloodstream that carried it into the acceptor so the therapeutic effect can be achieved.

Keywords : andrographolide, polymer nanoparticles, plga, permeation test, strat-m membrane

ANTIFUNGAL ACTIVITY OF SECONDARY METABOLITES FROM ENDOPHYTIC FUNGAL EXTRACTS ISOLATED FROM FIG (*FICUS CARICA* L.) AGAINST *CANDIDA ALBICANS***HANIDA DESTRIANA FATMAWATI^{1*}, PINUS JUMARYATNO¹, ANNISA FITRIA¹**¹ Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Islamic University of Indonesia, Yogyakarta, Indonesia.

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Abstract

The prevalence of candidiasis and antifungal resistance increased tremendously in the recent years. Metabolites from endophytic fungi seem to have the potential as a new source of drug. The *Ficus carica* L. plant has been reported for its antifungal activity. Therefore, it is hypothesized that the endophytic fungi of the roots, stems, fruits, and leaves from this plant may also exhibit antifungal compounds. This research was aimed to determine the antifungal activity of secondary metabolites derived from endophytic fungal extracts isolated from *Ficus carica* L. against *Candida albicans*. Endophytic fungal isolates were cultured in Potato Dextrose Broth, in a shaker incubator at 25-30°C at 60 rpm. The broth that consist of extracellular metabolites from the endophytic fungi was then filtered and extracted using ethyl acetate. A rotary evaporator was used to concentrate the extract. Antifungal activity of the endophytic fungal extracts was tested using MTT assay at 570 nm. The MIC of the endophytic fungal extracts against the pathogen was determined by microdilution method. The results showed that extracts of endophytic fungi isolated from leaves and fruit exhibited antifungal activity against *Candida albicans* with cell death value of $\pm 72.55\%$ and $\pm 52.82\%$ at 500 $\mu\text{g}/\text{ml}$, and MIC value of 500 $\mu\text{g}/\text{ml}$. Endophytic fungi that were isolated from stems and roots however did not produce any antifungal activity. In conclusion, the endophytic fungal isolates from *Ficus carica* L. has the mild antifungal activity against *C. albicans*.

Keywords: *Ficus carica* L., Endophytic fungal, *Candida albicans*, MTT Assay

ANTICANCER ACTIVITY OF SECONDARY METABOLITES FROM ENDOPHYTIC FUNGAL EXTRACTS ISOLATED FROM FIG (*FICUS CARICA* L.) AGAINST MCF-7 HUMAN BREAST CANCER CELLS

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Abstract

Cancer drug resistance and the side effects continues to be a major concern in the recent years and therefore the development of new drugs is essential. Endophytic fungi have emerged as a potential source of new anticancer drugs. This study was therefore conducted to assess the anticancer activity of endophytic fungi extracts isolated from *Ficus carica* L. against MCF-7 breast cancer cells. The endophytic fungal isolates were fermented in Potato Dextrose Broth. The broth was filtered and extracted using ethyl acetate. The metabolites in the extract was analyzed using Thin Layer Chromatography. The breast anticancer activity test was performed against MCF-7 cells using MTT assay. The results showed that endophytic fungal extracts contain different classes of compounds and the most dominant being terpenoid. The MTT assay showed that the A2 endophytic extract was the most potent against MCF-7 cells with an IC₅₀ value of 875.99 ppm. However, based on the IC₅₀ value it can be concluded that endophytic fungi isolates from *Ficus carica* L. did not show significant anticancer activity against MCF-7 cells.

Keywords :Endophytic fungi, *Ficus carica* L., Breast cancer, MCF 7 cell

PREPARATION AND CHARACTERIZATION GOLD NANOPARTICLE OF KARETS CASSAVA (*Manihot glazovii*) LEAF EXTRACT AS ANTIBREAST CANCER WITH BIOSYNTHESIS HIGH ENERGY

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Abstract

Research of nanoparticles has largely focused on biosynthesis using gold. Gold nanoparticles are widely used in medical as DNA labeling, biosensor, cancer therapy, antimicrobial and in drug delivery system. The content of flavonoid in the form of routine contained in Karet cassava leaf's extract (*Manihot glazovii*) has a role as reducing agent and stabilizer in synthesis of gold nanoparticle. This study is aimed to determine the preparation, characterization, and anti-cancer activity of gold nanoparticle of *Karets cassava* leaf extract with high energy biosynthesis. Gold nanoparticles are made by mixing HAuCl₄ with an extract using ultrasonic. Characterization of gold nanoparticles includes observation of its color change, time of gold nanoparticle formation, particle size, morphology and profiles. Observation of color change is done visually. The formation of gold nanoparticles was performed using the UV-Vis spectrophotometer. The particle size was observed using particle size analyzer. The morphology of gold nanoparticles was observed by using SEM and TEM while the profiles of the gold nanoparticles was observed by using Fourier transform infrared (FTIR). The result from this study showed that the best formula using high energy biosynthesis is formula 7 (extract 5% 1000 ul: HAuCl₄ 375 ul). Formula 7 (extract 5% 1000ul: HAuCl₄ 375 ul) revised yellow to pink, has a wavelength of 540 nm, has an average particle size of 65 nm, a PDI value of 0.44 and a morphology of AuNPs which means the triangle, hexagons, and circles, and had anti-cancer activity on the MTT assay test. Conclusion: Gold Nanoparticle of Karet cassava leaf extract (extract 5% 1000ul : HAuCl₄ 375 ul) showed a promising anti breast cancer activity.

Keywords: Gold Nanoparticle, Biosynthesis High Energy, Antibreast Cancer

EVALUATION STABILITY FOR GREEN SYNTHESIS NANOPARTICLE SILVER LEAF BANANA (*Musa sapientum*)

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Abstract

Silver Nanotechnology is a growing nanoparticle technology at the moment in the world. The process of forming through the reduction reaction with the addition of reducing agent from the secondary metabolite of banana leaf that helps the biosynthesis of nanoparticles. However, the reducing concentration and the silver salt may affect the size of the nanoparticles to be less stable to form the particle agglomeration. The addition of Polyvinylalcohol (PVA) as a stabilizer in banana leaf nanoparticles can keep particles in a stable state. The purpose of this research is to know the process of physical stability of silver biosynthesis biochemical nanoparticles (*Musa Sapientum*) after the addition of Polyvinylalcohol (PVA). The silver nanoparticles were synthesized using the chemical method (*Bottom Up*) by mixing the banana leaf extract and AgNO₃ 1mM. After preparation of banana silver nanoparticles, a mixture was added by adding a PVA of 0.5% concentration. Furthermore, it is evaluated by measuring the maximum wavelength of silver nanoparticles using UV-Vis spectrophotometer at 1 hour, 24 hours, 1 week, 2 weeks, 3 weeks, and 4 weeks. Measurement of particle size using Particle Size Analyzer (PSA) to see the stability of the particle size of nanosilver. The last test by observing Moforlogi from nanoparticles with the addition of PVA 0.5%. The result of spectrophotometer test is that the stability of PVA Polyvinylalcoholic addition of the fastest unstable formulation at week 4 is F1 200uL with maximum wavelength 334,60 and result of Particle Size Analyzer (PSA) test at 4th week with dissolved silver nanoparticle most unstable and rapidly agglomerated F1 200uL. The conclusions of UV-Vis spectrophotometer and *Particle Size Analyzer* (PSA) testing were unstable at 4 weeks ie F1.

Keyword : Nanoparticle silver, leaf banana, Polyvinylalkohol (PVA).

PREPARATION AND CHARACTERIZATION NANOPARTICLE BANANA LEAF (*Musa Sapientum*) WITH PROCESS GREEN SYNTHESIS

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Abstract

Chemical methods in nanoparticle preparation are more frequently applied by using chemicals as their reducers. However, the use of chemicals creates very dangerous waste that developed a more environmentally friendly method. Potential banana leaf with polyphenol compound *Epigallocatechin Gallate* (EGCG) can be used as bioreducers. Synthesis is carried out by chemical method to replace the reducing agent of the chemical with EGCG polyphenols. This study aims to examine formulation and characterization of silver nanoparticles with a combination of banana leaves (*Musa sapientum*). Preparation begins with the preparation of 40% banana leaf extract which is then added with AgNO₃ 1 mM. Further identification and characterization using several analytical techniques such as UV-Vis spectrophotometer to determine the absorption of a maximal wave from the nanoparticle. Observation of visual colour changes in the biosynthesis process. Particle size determination with Particle Size Analyzer (PSA), functional group spectrum in *Fourier Transform Infra-Red* Spectrophotometer (FTIR) and *Transmission Electron Microscopy* (TEM) to determine the morphology of the particles. The results of preparation and characterization on the formulation of the 7 nanoparticles of silver banana leaf, showed 414 nm wave absorption with the colour change to yellow after 15 minutes. The PSA measurement yielded 56.7 ± 0.40 nm with a PI of 0.28 ± 0.05 \bar{D} was good enough and the spectral uptake at FTIR involved the -OH group in the synthesis process. The morphological appearance of TEM analysis results in the form of a round crystal. Inferred from this study the banana leaf (*Musa sapientum*) used as a bioreductor can produce silver nanoparticles and be more environmentally friendly.

Keywords: Silver nanoparticles, banana leaf extract (*Musa sapientum*), biosynthesis, *Epigallocatechin Gallate* (EGCG).

MODIFICATION AND CHARACTERIZATION OF GOLD NANOPARTICLES 0.1% RUTIN TRIHYDRATE AND 2.5% PVA AS A STABILIZER WITH BIOSYNTHETIC PROCESS**SETYA DEWI WULANDARI^{1*}, BAMBANG HERNAWAN NUGROHO¹, DITYA AYU NATALIA¹, PUSPITA FITRI HANDAYANI¹, RENY MUFRIKHATUN EL WALIDAYN¹**¹Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, Jl Kaliurang km 14,5 Yogyakarta, +62274898444, Indonesia. Email: 14613112@students.uii.ac.id**Abstract**

The process of biosynthesis of gold nanoparticles is most desirable because it can be used as a sensor, catalyst, easily synthesized and functionalized, biocompatibility (low toxicity), and optical properties are easily regulated. One of the compounds that can be used to help the process is a rutin compound. Rutin has physiological actions such as anti-inflammatory, antibacterial, antioxidant, and antitumor. However, the preparations produced in the previous study were unstable due to rapid aggregation resulting in flocculation in the preparation, therefore, the addition of stabilizers such as PVA were necessary so that aggregation did not occur too quickly and the preparations did not flocculate. This study aims to characterize and improve the stability of gold nanoparticles with the addition of PVA as a stabilizer preparation. The method used in this research is gold nanoparticles made using bioreductions method. Characterization and stability are done by looking at color, wavelength, particle size, PDI, zeta potential, and morphology. The results of this study indicate that gold nanoparticles of rutin trihydrate samples are formed within ± 9 seconds for treatment and ± 5 seconds for control. The wavelength of the entire formula is within the gold nanoparticles range 500 - 550 nm at 24 h. Particle size and PDI of the best formulas (900 μ L HAuCl₄, 1000 μ L rutin trihydrate, and 525 μ L PVA) gold nanoparticles were 116.9 nm and 0.049. The morphology of gold nanoparticles formed are round, triangular, square, hexagonal and hexagonal. The stability of the preparation can be better in terms of wavelength parameters, particle size, PDI, and zeta potential. The conclusion is to add 525 μ L of 2.5% PVA can stabilize the preparation.

Keywords: Rutin Trihydrate, PVA, Gold Nanoparticles, Biosynthesis, Stability

FORMULATION AND CHARACTERIZATION OF PLGA POLYMER NANOPARTICLES EXTRACTED FROM SNAKE FRUIT SKIN (*Salacca zalacca*) USING SOLVENT EVAPORATION METHOD**ARMAN SURYANI^{1*}, NINDY MUTIA PRATIWI¹, EGA ASTIANA NUZUL WAHYUNI¹, YANDI SYUKRI¹, BAMBANG HERNAWAN NUGROHO¹**¹Faculty of Math and Science, Departement of Pharmacy, Universitas Islam Indonesia, Jl Kaliurang km14, 5Yogyakarta, +62274898444, Indonesia. Email: armansuryani4@gmail.com**Abstract**

Snake fruit skin (*Salacca zalacca*) has been processed by the community as a traditional medicine made in the form of tea that is believed to hereditary community to treat Diabetes. The skin of the fruits contains flavonoids, tannins and alkaloids. However, the use of natural materials has limitations, which is often experienced failure in the clinic phase due to low bioavailability. Polymer-based nanoparticles are often used as effective carriers for drug delivery into cells. One of the polymers commonly used in the manufacture of nanoparticles is polylactic-co-glycolic-acid (PLGA) which is a polymer that can be used as a drug delivery system. The use of nanoparticles (PLGA) is able to enhance the pharmacokinetic profile of bioavailability of a drug derived from natural materials and has good degradation characteristics as well as the possibility of continuous drug delivery. The purpose of this research is to formulate and know the characteristics of Snake fruit skin extract (*Salacca zalacca*) with the base of polylactic-co-glycolic-acid (PLGA) polymer nanoparticles. Preparation of snake fruit skin extract by maceration method, nanoparticle with solvent evaporation method, organoleptic test, globul measurement and potential zeta measurement with Particle Size Analyzer (PSA) stability test and morphological observation of nanoparticles with TEM (Transmission Electron Microscopy). The results of this study resulted particle measurement with Particle Size Analyzer, with the value of $174,9 \pm 3,119$ nm and zeta potential value equal to $-36,4 \pm 1,22$. In the stability test, the characteristics of PLGA nanoparticles with salvage extracts with 250x dilution yielded the best stability with particle size 165.866 ± 2.837 nm, PI 0.289 ± 0.122 and zeta potential -38.866 ± 0.450 . The results obtained from observations using Transmission Electron Microscopy (TEM) showed that the sample has a monodisperse distribution form. The white portion shows the nonpolar compound while the black portion shows the polar compound.

Keywords: Snake fruit skin, polylactic-co-glycolic-acid (PLGA), solvent evaporation

PLGA BASED NANSUS (NANO SUSPENSION) CONTAINING DRAGON FRUIT PEEL EXTRACT FOR BREAST ANTICANCER ACTIVITY

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Abstract

One of the technologies being developed is nanoscale technology. Nanotechnology is a technology where drug particles are made on a nanoscale (10 nm - 1000nm). Nanosuspension drug formulations can reduce the risk of toxicity as well as improve the effectiveness, tolerability and therapeutic index of the drug. Dragon fruit peel (*Hylocereus polyrhizus*) is rich in polyphenols and antioxidants, the red dragon fruit peel is greater than its flesh activity. *Poly lactic-co-glycolic acid* (PLGA) based polymers nanosuspension are often used as effective carriers for drug delivery into cells. PLGA nanosuspension are easily recognizable by the body's immune system and then eliminated from the circulatory system. This study aims to formulate the nanosuspension of dragon fruit peel extract as breast anticancer in T47D cancer cells, in which the dragon fruit skin is active, PLGA as drug carrier polymer, PVA as polymer, chitosan as polymer and ethyl acetate as solvent. The solvent evaporation method utilizes high-speed homogenization, followed by solvent evaporation, either by continuous magnetic stirring at room temperature or at low pressure. This method is considered the most suitable to use, the time of manufacture is not long and the method is simple. Characterization of nanosuspension includes organoleptic test, particle size measurement, polydispersity index and zeta potential. The result of characterization on formula yielded particle size $445,4 \pm 12,7$ nm with the index of polydispersity $0,181 \pm 0,07$ and zeta potential $11,36 \pm 0,51$, these results indicate that the particle size and zeta potential obtained are good and the polydispersity index indicates that the resulting formula is stable.

Keywords :Dragon fruit peel, nanosuspension, PLGA

ANDROGRAPHOLIDE PERMEATION STUDY THROUGH STRAT-M MEMBRANE USING OLEIC ACID AND PEG 400 AS THE ENHANCERS

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Abstract

Andrographolide is the main components of Sambiloto (*Andrographis paniculata* (Burm. F.) Ness) which has many properties such as an anti-inflammatory effect. Andrographolide is a lipophilic compound with log P of $2,632 \pm 0,135$, the molecular weight of 350,45 g / mol and has a low bioavailability (2,67%), so it was possible to be administered by transdermal route. Transdermal drug delivery system can improve the effectiveness of a drug. To increase the amount of drug that enters the body is required an agent that can increase the permeability of skin barrier called permeation enhancer. Some of the most commonly used permeation enhancers are oleic acid and PEG 400. This study aims to determine the effect of oleic acid and PEG 400 as enhancers to andrographolide permeation through Strat-M membrane, and to determine the kinetics of transport of andrographolide using the WinSAAM software. This study was conducted by making 6 formulas using the different concentration of permeation enhancers. The ratio of oleic acid and PEG 400 (%w/w) in Formula 1 is 5%:35%, Formula 2 is 10%:30%, Formula 3 is 15%:25%, Formula 4 only uses oleic acid 15%, Formula 5 only uses PEG 400 40% and Formula 6 without the addition of enhancers that has been used as the comparison. Permeation study was performed by Franz diffusion cell with Strat-M membrane for 12 hours. HPLC with UV detector was used to determine the concentration of andrographolide in receptor compartment. The results showed that combination of oleic acid and PEG 400 were able to increase the amount and flux of drug release better compared to single enhancer and formulas without enhancers. The predicted results using WinSAAM software showed that andrographolide has three compartment models with the first order of drug release.

Keywords : andrographolide, oleic acid, PEG 400, enhancer, permeation

DEVELOPEMENT AND *IN-VITRO* EVALUATION OF AMOXICILLIN LOADED HPMC K15M MUCOADHESIVE MICROCAPSULES USING 3²- FULL FACTORIAL DESIGNS FOR SUSTAINED DRUG RELEASE AT THE GASTRIC MUCOSA

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Abstract

Amoxicillin (α -amino-p-hydroxybenzyl-penicillin) is a semisynthetic, orally absorbed and widely prescribed β -lactam antibiotics. It is now widely used for eradication of gastric *H. pylori* infection combined with a second antibiotic and an acid-suppressing agent despite its short elimination half-life of one hour. The purpose of this study was to develop and evaluate amoxicillin loaded HPMC K15M mucoadhesive microcapsules for sustained drug release at the gastric mucosa to prolong residence time of dosage form in stomach and to achieve controlled drug release for more effective *H. pylori* eradication. Amoxicillin mucoadhesive microcapsules were formulated by ion gelation technique using 3² factorial designs. A 3² full factorial design was used to derive statistical equation, ANOVA analysis, contour plots and 3D response surface plots. FT-IR (4000 cm⁻¹- 450 cm⁻¹) of amoxicillin and with polymers was performed by using potassium bromide pellet method; and result was no interaction between the drug and polymers combined. Different polymer ratios of HPMC K15M and sodium alginate were used to formulate nine formulations (F1 to F9) of HPMC K15M loaded mucoadhesive microcapsules of amoxicillin and characterized by determining its percentage of yield, particle size, percentage of entrapment efficiency, swelling index, percentage of mucoadhesion and percentage of drug release. The optimized formulations F9 exhibited a high drug entrapment efficiency of 92.50 \pm 0.04%, particle size of 840.18 \pm 0.02 μ m, percentage yield of 97.50 \pm 0.01%, swelling index of 100.20 \pm 0.02%, percentage mucoadhesion after 8 h was 65 \pm 0.03% and the drug release was sustained for more than 14 h. The kinetics of the drug release of amoxicillin mucoadhesive microcapsules formulation showed good fitting with zero order and Korsmeyer-Peppas model equation followed by a non-Fickian type of release. It was observed that amoxicillin mucoadhesive microcapsules was adhered more strongly to the gastric mucous layer and drug release sustained longer period of time in the gastric mucosa consequences increasing bioavailability, improving patient's compliance and reducing dosing frequency. Amoxicillin mucoadhesive microcapsules can be effectively used for sustained drug release to the gastric mucosa in treatment of *H. pylori* infection.

Keywords: *Helicobacter pylori*, Amoxicillin, sodium alginate, mucoadhesive drug delivery, Factorial designs, ion gelation technique

FORMULATION AND EVALUATION OF METRONIDAZOLE LOADED CARBOPOL 934P MUCOADHESIVE MICROCAPSULES USING 3² FACTORIAL DESIGNS FOR THE TREATMENT OF *H. Pylori* INFECTION

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Abstract

Metronidazole [1-(2-hydroxyethyl)-2-methyl-5-nitroimidazole] is a broad spectrum antimicrobial agent. It is used in the eradication of *Helicobacter pylori* Infections which is responsible for developing gastritis, gastric ulcer and gastric carcinoma. Due to the short biological half-life (6-8 h) and bitter taste which may lead to compliance issues; the present study was to develop and evaluate metronidazole loaded carbopol 934P mucoadhesive microcapsules for sustained drug release at the gastric mucosa for treatment of *H. pylori* infection. Metronidazole mucoadhesive microcapsules were formulated by ion gelation technique using 3² factorial designs. A 3² full factorial design was used to derive a statistical equation, ANOVA analysis, contour plots and 3D response surface plots. Different polymer ratios of carbopol 934P and sodium alginate were used to formulate nine formulations (F1 to F9) of carbopol 934P loaded mucoadhesive microcapsules of amoxicillin. The *In vitro* drug release and mucoadhesion was carried out by USP29 type-II tablet dissolution test apparatus and disintegration tester using goat stomach mucosa. The formulation was characterized by determining possible drug-polymer interaction using FT-IR, percentage of yield, particle size, percentage of entrapment efficiency, swelling index, percentage of mucoadhesion and percentage of drug release. FT-IR spectroscopy demonstrated that there was no interaction between the drug and polymers combined. The optimized formulations F9 exhibited a high drug entrapment efficiency of 87.74±0.03%, particle size of 845.40±0.02 (µm), percentage yield of 97.80±0.01%, swelling index of 102.33±0.01%, percentage of mucoadhesion after 8 h was 64±0.04% and the drug release (52.30±0.06%) sustained more than 14 h. The kinetics of the drug release of amoxicillin mucoadhesive microcapsules formulation showed good fitting with zero order and Korsmeyer-Peppas model equation followed by a non-Fickian type of release. The *in vitro* release study indicates that the mucoadhesive microcapsules of metronidazole could sustain the release of the drug for more than 14 h. Similarly, the *in vitro* mucoadhesive test showed that metronidazole mucoadhesive microcapsules adhered more strongly to the gastric mucous layer and could retain in the gastric mucosa for an extended period of time, consequently increasing bioavailability, patient's compliance and reducing dosing frequency. The study shows that metronidazole mucoadhesive microcapsules can be effectively used for sustained drug release to the gastric mucosa in treatment of *H. pylori* infection.

Keywords: Metronidazole, mucoadhesive drug delivery, factorial designs, Ion gelation technique, ANOVA analysis