

## TIME TESTED REMEDIES FOR WOUND CARE FROM AYURVEDA SCIENCES

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### ABSTRACT

**Objectives:** Management of the wound is a challenge before clinician as well as pharmaceutical industries. It accounts a huge amount of economic loss every year. A useful therapeutic agent for wound care should preferably give a better result on one or more phases of healing devoid of harmful effects. A useful step in this regard is the use of traditional medicinal remedies and plants. The World Health Organization (WHO) also supports, promote, and encourage the use of various traditional medicines in primary health care due to easy accessibility, cost efficiency, safety, and trust of the public in them. Since many centuries, Ayurvedic medicines have been used by people due to its ability to enhance immunity and prevent diseases. A number of plant, animal, and mineral products are mentioned in Ayurvedic classics for the treatment of different stages of the wound. At the moment, scientific research on medicinal plants is performed most intensely in research institutes, universities, and pharmaceutical laboratories as well as in the clinics of various developed countries.

**Methods:** Major Ayurvedic classics were searched for such useful remedies for wound care which are effective, easily available, and easy to prepare and use them without any side effects.

**Results:** A total of 71 such remedies were found in the Ayurvedic treaties and listed in the article.

**Conclusion:** The article may help the practitioner serving in the remote areas where these plants available abundantly.

**Keywords:** Wound, Traditional medicines, Ayurveda, Medicinal plants.

### INTRODUCTION

The dependence of the human race on plant-derived products for the treatment of various ailments is increasing day by day. Since ancient time plants serve as the primary source of medicines, either alone or in combination with others. The knowledge regarding the use of such medicinal plants was transferred from one generation to another by indigenous people in tribes and rural areas across the world [1]. Previous research has been identified and reported that a number of natural products promote the health of an individual. Currently, a large number of therapeutic agents are prepared from these plants [2,3]. Ayurveda is one of the oldest health care systems, offers a number of plant, animal, and mineral origin drugs for human ailments [4-7]. In the present scenario of global herbal pharmaceutical industry, outreach and acceptability of Ayurvedic medicines need a continuous availability of quality medicinal plants based raw material [8-10]. Ancient treaties are a reservoir of knowledge regarding medicinal plants, and exploration of these medicinal plants from them is an important step in global acceptance of natural products.

The wound is the physical injuries leading to the damage of cellular and anatomical architecture of skin, mucus membrane, or underlying tissues [11]. Its healing is a very complex and multifaceted phenomenon includes a series of pathophysiological, biochemical, and cellular changes. Inflammation, proliferation, and remodeling are the three basic steps in wound healing [12]. Other important features comprise fibrin formation, collagen deposition, hemostasis, angiogenesis, and remodeling of tissues to reepithelization [13]. Various factors influence the healing process, that why it is still a challenge before health care practitioner [14]. Traditional medicines contribute at least one-third of wound care remedies worldwide [15]. In Ayurvedic sciences, the concept of different types of the wound is mention under one umbrella of *Vrana*. Acharya Sushruta (father of surgery) describe its various forms such as *Vidradhi* (abscess), *Nadivrana* (sinuses), *Dustavrana* (septic wounds), and *Prameha pidaka* (diabetic carbuncle). Different 60 therapeutic steps are advised for the wound healing process. Numbers of plants are used in these steps for various purposes such as healing,

purification, disinfection, bandaging, pigmenting procedures, and fumigation [16]. In the present article, an attempt was made to collect such useful remedies from Ayurvedic classics for wound care which are effective, easily available, and easy to prepare and use them without any side effects.

### Ayurvedic remedies for healing of wounds

1. Ajagandha (*Thymus serpyllum* Linn.) is used to purify the wick in wounds [16].
2. Apamarga (*Achyranthes aspera* Linn.), Asvagandha (*Withania somnifera* Dunal.), Talpatri (*Abies pindrow* Royale), *Suvarcala* (black salt), and drugs of Kakolyadi gana (group of drugs starting from *Lillium polyphyllum* D. Don.) are recommended for the elevation of the depressed wound [16].
3. Apamarga (*A. aspera*), Aragvadha (*Cassia fistula* Linn.), Nimba (*Azadirachta indica* A. Juss.), Koshataki (*Luffa acutangula* Linn.), Tila (*Solanum indicum*), Brihati (*S. indicum* Linn.), Kantkari (*Solanum surattense* Burm.f.), Haritala (arsenic trisulfide), and Manahsila (arsenic disulfide) are used as *sodhana* drugs (purifier) of wounds [16].
4. Leaves of Arka (*Calotropis procera*) are used to cover wound [17].
5. Oil cooked with latex of Snuhi (*Euphorbia nerifolia* Linn.) and Arka (*C. procera*) along with bee-wax heals chronic ulcer [18].
6. The mature and clean leaves of Kadali (*Musa paradisiaca* Linn.) help in removing the hidden pus from wounds [19].
7. Powder of Aragvadha (*C. fistula*), Haridra (*Curcuma longa*), and Hinsra (*Capparis sepiaria* Linn.) mixed with honey and ghee is made into a wick which is applied in the wound for their purification [16].
8. For cleaning wound decoction of leaves of Jati (*Jasminum officinale*) and Karvira (*Nerium indicum* Mill.) is used [16].
9. Indravaruni (*Citrullus colocynthis* Schrad.) is used as *vrana-samsodhana vartti* [16].
10. In wound caused by *vata*, it should be covered with the leaves of Erand (*Ricinus communis* Linn.), Bhurja (*Betula utilis* D. Don.), Putika (*Mentha spicata* Linn.), and Kasmari (*Gmelina arborea* Roxb.) [16].
11. Triphala (powder of three fruits, viz., Haritaki [*Terminalia chebula*

- Retz.), Bibhitaki [*Terminalia bellirica* Roxb.], and Amalaki [*Emblica officinalis* Gaertn. in equal quantity]), Lodhra (*Symplocos racemosa* Roxb.), Mundi (*Sphaeranthus indicus* Linn.), and bark of Dhava (*Anogeissus latifolia* Wall.); this powder formulation is useful for healing of wounds [16].
12. The leaves of Kadamba (*Anthocephalus cadamba* Mig.), Arjuna (*Terminalia arjuna* Roxb. W. and A.), Nimba (*A. indica*), Patala (*Stereospermum suaveolens* DC), Pippali (*Piper longum* Linn.), Arka (*C. procera*) [17], and Leaves of Asvattha (*Ficus religiosa*) are used for covering the wound [17].
  13. Decoction of Jaya (*Premna mucronata* Roxb.), Jati (*J. officinale* L.), Karvira (*N. indicum*), Arka (*C. procera*), and Aragvadhya (*C. fistula*) singly is used for washing the wounds especially on penis [20].
  14. Oil cooked with Durva (*Cynodon dactylon* Linn.) juice or paste of Darvi (*Berberis aristata*) bark is an efficacious wound healing drug [17].
  15. Decoction of Karanja (*Pongamia pinnata* Linn.), Nimba (*A. indica*), and Nirgundi (*Vitex negundo* Linn.) act as an antimicrobial agent and promotes wound healing [20].
  16. Cirabilva (*Holoptelea integrifolia* Planch.), Kalihari (*Gloriosa superba* Linn.), Danti (*Baliospermum montanum* Muell. Arg.), Citraka (*Plumbago zeylanica* Linn.), Karvira (*N. indicum*), and feces of pigeon, heron, and vulture act as tearing agents for wounds [16].
  17. The wound caused by accidental injury is filled with Camphor (*Cinnamomum camphora* Nees and Eberm.) mixed with ghee and bandaged by this. It heals free of infection and pus [21,22].
  18. Decoction of Karvira (*N. indicum*), Arka (*C. procera*), and Kutaja (*Holarrhena antidiysenterica* Linn.) promotes healing of wounds [17].
  19. Semisolid extract of Nyagrodha group (a group of drugs starting with *Ficus benghalensis* Linn.) and Triphala is useful for healing [16].
  20. Decoction of Triphala, Khadira (*Acacia catechu* Willd.), Daruharidra (*B. aristata* DC.), Nyagrodha group, Bala (*Sida cordifolia* Linn.), Kusa (*Desmostachya bipinnata* Stapf.), and tender leaves of Nimba (*A. indica*) separately can be use to clean the wound [17].
  21. Guggulu (*Commiphora mukul* [Hook. Ex stocks.] Engl.) should be used with Triphala decoction in wounds, skin disease, sinus, and fistula-in ano [23].
  22. The wound heals fastly by a dusting of powder of barks of Arjuna (*T. arjuna*), Udumbara (*Ficus racemosa* Linn.), Asvattha (*F. religiosa*), Lodhra (*S. racemosa*), Jambu (*Syzygium cuminii* Linn.), and Katphala (*Myrica nagi* Hook.f.) [17].
  23. In wound, ripened and opened, oil cooked with Jati (*J. officinale*), Bhallataka (*Semecarpus anacardium* Linn.), and Saptaparna (*Alstonia scholaris* R. Br) should be used for purification [16].
  24. Paste of Jivanti (*Leptadenia reticulata* W. and A.) should be applied locally for 3 days. It presses the wound due to sliminess and thus promotes its healing [19].
  25. Jyotishmati (*Celastrus paniculatus* Willd.), Kalihari (*G. superba*), Danti (*B. montanum*), Trivrit (*Operculina tupethum* Linn.), Tila (*S. indicum*), Kustha (*Saussurea lappa* C.B. Clarke.), Durva (*C. dactylon*), Tilvaka (*Viburnum nervosum* D. Don.), Girikarnika (*Clitoria ternatea* Linn.), and Svarnaksiri (*Euphorbia thomsoniana* Boiss). These constitute the wound-cleansing group [16].
  26. Paste of Tila (*S. indicum*) and Madhuka (*Madhuca indica* J.F. Gmel.) mixed with ghee promotes wound healing [16].
  27. Wounds which are free from pus but do not heal should be treated with the application of the paste of Tila (*S. indicum*) mixed with honey [16,20].
  28. In wounds having predominance of vata (the air or nervous system humor) with burning sensation and pain, sesamum (*S. indicum*) and linseed (*Linum usitatissimum*) parched and then dipped in milk and pounded with the same milk should be applied as paste [20].
  29. Triphala slightly fried and mixed with oil should be applied in the crack of feet [19].
  30. Linseed (*L. usitatissimum*), Guggulu (*C. mukul*), latex of Snuhi (*E. neriifolia*), excreta of cock and pigeon, alkali of Palasa (*Butea monosperma* (Lam.) Kuntze.), Svarnaksiri (*E. thomsoniana*), and Danti (*B. montanum*). This group is useful as tearing agent for ripe abscess [17].
  31. Oil cooked with Durva (*C. dactylon*) juice or Kampillaka (*Mallotus philippinensis* Muell. Arg.) or paste of Darvi (*B. aristata*) bark is a very good healing of wounds [17,20].
  32. Paste of Dravanti (*Croton tiglium* Linn.), Cirabilva (*H. integrifolia*) applied over wound act as a wound cleaner [16].
  33. Old coconut oil (*Cocos nucifera* Linn.) promotes healing of wound [19].
  34. One should take juice of the leaves of Dhattura (*Datura metel* Linn.) or Nimba (*A. indica*) mixed with honey. It is a very good anthelmintic [24].
  35. Paste of Salmali barks (*Salmalia malabarica* DC. Schott and Endl.), Bala root (*S. cordifolia*), and tender leaves of Vata (*F. benghalensis*) should be applied, and the wound should be sprinkled with their decoction [17].
  36. Decoction of Nyagrodha (*F. benghalensis*), Udumbara (*F. racemosa*), Asvattha (*F. religiosa*), Kadamba (*A. cadamba*), Plaksa (*Ficus lacor* Buch.- Ham.), Vetasa (*Salix caprea* Linn.), Karvira (*N. indicum*), Arka (*C. procera*), and Kutaja (*H. antidiysenterica*) are wound-healers [17].
  37. The latex of Vata (*F. benghalensis*) should be applied. It destroys maggots in wound [19].
  38. Mahat pancamula (root of five plant, namely, *Aegle marmelos* Correa, *P. mucronata*, *Oroxylum indicum* Vent., *G. arborea*, and *S. suaveolens*) should be used for washing wounds [16].
  39. Wound heals up by application of Pancavalkala (bark of five plant, namely, *F. benghalensis*, *F. racemosa*, *F. religiosa*, *Thespesia papulnea* Soland. Ex. Correa, *F. lacor*) powder mixed with Badari powder (*Ziziphus jujube*) or of the powder of Dhataki (*Woodfordia fruticosa* Kurz.) and Lodhra (*S. racemosa*) [17,20].
  40. If the wound looks dirty, it should be washed with decoction of Patola (*Trichosanthes dioica* Roxb.) while in clean condition decoction of the bark of Nyagrodha group drugs should be used [20].
  41. Wound caused by kapha, leaves of Patha (*Cissampelos pareira* Linn.), Murva (*Marsdenia tenacissima* W. and A.), Guduchi (*Tinospora cordifolia* (Willd.) Miers ex Hook.f. and Thoms.), Kakamachi (*Solanum nigrum* Linn.), and Haridra (*C. longa*) should be used for covering the wound [16].
  42. In preparation of ghrita for wound healing, Prisniparni (*Uraria picta* Desv.), Kapikacchu (*Mucuna pruriens* (L.) DC.), Haridra (*C. longa*), Daruharidra (*B. aristata*), Jati (*J. officinale*), and Kakolyadi drugs should be used [16].
  43. Decoction of Triphala, Khadir (*A. catechu*), Darvi (*B. aristata*), Nyagrodha group, Bala (*S. cordifolia*), Kusa (*D. bipinnata*), and Nimba (*A. indica*) cleanses wound [17].
  44. Application of the paste of Bakuci (*Psoralea corylifolia* Linn.) leaves checks hemorrhage in wounds [19].
  45. Bhurja (*B. utilis*), purgative drugs, and Guggulu (*C. mukul*) act as depressing agents [17].
  46. In wound having aggravation of pitta, rakta and poison, cold paste of Barley, ghee, Bhurja (*B. utilis*), bee-wax, Srivestaka (exudates from *Pinus roxburghii*), and Devdaru (*Cedrus deodara* (Roxb.) Loud.) should be applied [25].
  47. Oil cooked with Bhringaraja (*Eucalyptus alba*) juice alleviates sinus caused by kapha, vata, scrofula, and wounds [16].
  48. Paste of Madhuka (*M. indica*) mixed with Nimba (*A. indica*) leaves act as wound cleaning agent [17].
  49. Oil is cooked with barks of Asvakarna (*Vateria indica* Linn.), Dhava (*A. latifolia*), Salmali (*S. malabarica*), Messringa (*Gymnema sylvestre* R. Br.), Sallaki (*Boswellia serrata* Roxb. Ex Coleb.), Arjuna (*T. arjuna*), Vidari (*Pueraria tuberosa* DC.), Bala root (*S. cordifolia*). It promotes wound healing [16].
  50. Barley flour cooked with milk and added with ghee or parched grain flour mixed with sugar and honey should be taken with milk in fever and burning sensation [17].
  51. Paste of Rasona (*Allium sativum* Linn.) applied to wound kills organisms [20].
  52. Bark of Saptaparna (*A. scholaris*), Karanja (*P. pinnata*), Arka (*C. procera* [Ait.] R. Br.), and Nimba (*A. indica*) pounded with cow's urine should be applied [16].
  53. Oil cooked with Lakuca (*Artocarpus lakoocha* Roxb.) Juice, Haridra (*C. longa*), sulfur, and Punnaga (*Calophyllum inophyllum* Linn.) in urine added with a little salt cleansing and heal wound [19].

54. Decoction of Samanga (*Rubia cordifolia* Linn.) act as wound healing agent [16].
55. Powder of Dhataki (*W. fruticosa*) and Lodhra (*S. racemosa*) promotes wound healing [17].
56. Lodhra (*S. racemosa*), Nyagrodha (*F. benghalensis*), Khadir (*A. catechu*), Triphala, and ghrita; this paste provides looseness and softness in wound [17].
57. Vaca (*Acorus calamus* Linn.) comes in the group of wound-cleansing drugs [16].
58. Sarpunkha (*Tephrosia purpurea* Linn.) mixed with honey heals all types of wounds [20].
59. Powder of Sallaki fruits (*B. serrata*), or ash of flax should be applied over the wound and then bandaged [16].
60. Intake of cold Sali rice, in diet, worm, unctuous and with profuse soups and meats of wild animals promotes healing of wounds [16].
61. Salmali bark (*S. malabarica*) and Bala root (*S. cordifolia*) should be applied to the wound. It promotes burning sensation [17].
62. Fruits and seeds of Sirisa (*Albizia lebbek* Benth.) and Karanja (*P. pinnata*) and powder of inorganic substances depress the excessive granulation in wounds [16].
63. Dirty wounds heal up by application of the latex of Saptaparna (*A. scholaris*.) [20].
64. The wound predominant in *vata* (the air or nervous system humor) and having discharge and severe pain should be fumigated with barley, ghee, Bhurja (*B. utilis*) patra, beewax, and Devdaru (*C. deodara*) [25].
65. Sarjarsa (*Shorea robusta* Gaertn.f.) should be used for fumigating the wound [16].
66. Wound should be fumigated with Sarsap (*Brassica campestris* Linn.), and Nimba (*A. indica*) leaves mixed with ghee and salt twice a day for 10 days regularly [16].
67. Sariva (*Hemidesmus indicus* R. Br.) root alone is capable of cleaning all types of the wound [20,26].
68. Semisolid extract should be prepared of Patola (*T. dioica*) and Triphala or other *shodhan* drugs for cleansing the wound [16].
69. Guggulu (*C. mukul*), Atasi (*L. usitatissimum*), cow's teeth, Svarnksiri (*E. thomsoniana*), pigeon's feces, alkaline herbs, and alkalis and as tearing agents for the mature inflammation [25].
70. The wound should be fumigated with Sriwasa (exudates from *P. roxburghii*), Guggulu (*C. mukul*), Aguru (*Aquilaria agallocha*), and Shalniryas (exudates from *S. robusta*) to facilitate secretion of pus and thus promote healing [26].
71. Moreover, the wound may also fumigate with Nimba Patra (Leaves of *A. indica*), Vacha (*A. calamus*), Hingu (*Ferula foetida*) Ghee, Salt and mustard to remove dryness, itching and pain [26].

## CONCLUSION

Medicinal plants play a key role in primary health care system, and the prevalence of use of plants/plant products mention in various contemporary and traditional systems of medicine, with or without any written documentation or regulation. With the advancement of pharmaceutical industries, the use of modern medicines increases may fold and cover all most the market. With larger commercial interest, the western countries promoted modern medicine, in spite of its high cost and side effects. Besides, this use of medicinal plants is continuing and attained a glorious place in the current century. Plants contain some major phytochemicals which have likely to build up into an efficient healing agent. The wound is a widespread problem, and everyone faced it in his day to day life. Sometimes, the wounds convert into a serious condition, and many diseases contribute to delay wound healing. Ethnobotanical approaches based on plants are a chief methodology to treat the wound. Documented knowledge of Ayurveda needs an exploration so that the discovery of a novel and effective wound care product become possible. The present article enumerates a few useful remedies for wound care. We have also indicated the same along with the part that has been reported to be used in the healing of the wound. The part used becomes all the more important because of the

fact that while providing the ethnopharmacological evidence toward these plants. Researchers must ensure that they use that particular part mentioned in traditional medicines rather than random screening. We hope that the article helps the researchers in understanding the scientific basis of the method by which these plants are used and also in the development of new drugs.

## REFERENCES

1. Maurya SK, Seth A, Gautam DN, Singh AK. Biodiversity and indigenous uses of medicinal plant in the Chandra Prabha Wildlife Sanctuary, Chandauli District, Uttar Pradesh. *Int J Biodivers* 2015;2015:394307.
2. Saklani A, Kutty SK. Plant-derived compounds in clinical trials. *Drug Discov Today* 2008;13(3-4):161-71.
3. Butler MS. The role of natural product chemistry in drug discovery. *J Nat Prod* 2004;67(12):2141-53.
4. Maurya SK, Seth A. Potential medicinal plants and traditional Ayurvedic approach towards urticarial. An allergic skin disorder. *Int J Pharm Pharm Sci* 2014;6(5):172-7.
5. Kushwaha AK, Maurya SK. Herbal approach toward vatarakta (Gout), A metabolic syndrome: A review. *Int J Ayurveda Pharm Chem* 2014;1(2):22-43.
6. Maurya SK, Kumar D, Kushwaha AK, Tiwari SK. Scientific look insight the Ayurvedic classics for antiuroli-thiatic plants. *Int Ayurvedic Med J* 2015;3(3):724-32.
7. Mishra A, Sharma V, Hem K, Maurya SK. Plants used for treatment of diarrhea: An Ayurvedic prospective. *Innov J Ayurvedic Sci* 2015;3(1):1-6.
8. Ahmad A, Maurya SK, Seth A, Singh AK. Pharmacognostical evaluation of the fruit of Plaksha *Ficus lacor* buch. Ham. *Glob J Res Med Plants Indig Med* 2014;3(4):165-74.
9. Kumar S, Maurya SK, Seth A, Singh AK. Quality control standardization of the bark of *Moringa oleifera* Lam. *Int J Pharm Pharm Sci* 2015;7(1):56-60.
10. Seth A, Mishra A, Maurya SK. Quality evaluation and standardization of *Adraka Khanda*: An Ayurvedic formulation. *J Chem Pharm Res* 2015;7(5):523-9.
11. Joshi A, Sengar N, Prasad SK, Goel RK, Singh A, Hemalatha S. Wound-healing potential of the root extract of *Albizia lebbek*. *Planta Med* 2013;79(9):737-43.
12. Chaturvedi AP, Kumar M, Tripathi YB. Efficacy of *Jasminum grandiflorum* L. leaf extract on dermal wound healing in rats. *Int Wound J* 2013;10(6):675-82.
13. Prasad SK, Kumar R, Patel DK, Hemalatha S. Wound healing activity of *Withania coagulans* in streptozotocin-induced diabetic rats. *Pharm Biol* 2010;48(12):1397-404.
14. Murthy S, Gautam MK, Goel S, Purohit V, Sharma H, Goel RK. Evaluation of *in vivo* wound healing activity of *Bacopa monniera* on different wound model in rats. *Biomed Res Int* 2013;2013:972028.
15. Mantle D, Gok MA, Lennard TW. Adverse and beneficial effects of plant extracts on skin and skin disorders. *Adverse Drug React Toxicol Rev* 2001;20(2):89-103.
16. Sharma PV. *Susruta Samhita*, with English Translation of Text and Dalhana Commentary Along with Critical Notes. 1st ed. Varanasi: Chaukhambha Bharati Academy; 2001.
17. Jadavji TA. *Caraka Samhita* of Agnivesa, Elaborated by Caraka and Drinhbala with the *Ayurveda Dipika* commentary by Cakrapanidatta. Varanasi: Chaukhambha Vidyabhawan; 2011.
18. Sharma RM. *Sahasrayoga*. 3rd ed. Varanasi: Chaukhambha Sanskrit Sansthana; 2002.
19. Late Brahmasee Vayaskara Moss NS, editor. *Vaidya-Manorama*. Kottayam: Vaidhyasarathi; 1978.
20. Tiwari PV. *Vrindamadhava* of Vrinda. 1st ed. Varanasi: Chaukhambha Visvabharati; 2007.
21. Mishra BS. *Rajmaartanda* of Shree Bhojraj. 2nd ed. Varanasi: Chaukhambha Bharati Academy; 1983.
22. Tripathi ID. Chakrapanidatta: *Chakradatta*. Varanasi: Chaukhambha Sanskrit Bhawan; 2010.
23. Tripathi ID. *Gada Nigraha*. Varanasi: Chaukhambha Sanskrit Sansthan; 2005.
24. Mishra BS. *Bhavaprakash* of Bhavamishra. 11th ed. Varanasi: Chaukhambha Sanskrit Bhawan; 2009.
25. Shastri HS. *Astanga Hridaya* of Vagbhata. Varanasi: Chaukhambha Sanskrit Prakashan; 1997.
26. Shastri AD. Govind Das: *Bhishjya Ratnavali*. Varanasi: Chaukhambha Sanskrit Sansthan; 2008.