

FIRST AID FOR SPORTSMAN INJURIES WITH HERBAL WOUND HEALING  
PLANTS FROM THE CHANDOLI REGION

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### ABSTRACT

Wound healing is a biological and biochemical process that restores damaged tissue's natural structure and functioning. Healing is a natural process in which the body heals itself from tissue damage. Healing takes a long time, and the risk of microbial infection is significant. Shortening the time it takes to heal or minimising the negative repercussions are two ways to improve the healing process. India has a long history of herbal medicine in its healthcare system. Several herbs and medicinal plants that have been found to be effective wound healers have been identified and prepared for wound therapy and management. Throughout history, several herbal preparations have been employed in the management and treatment of wounds. The purpose of this assessment is to highlight several medicinal plants from the Chandoli region that have been scientifically proven to be effective in the treatment of cuts and wounds as a wound healer.

**Key words:** Chandoli, Wound, Wound healing, Wound healing medicinal plants.

### INTRODUCTION

A wound is a disruption of a tissue's cellular and anatomic continuity, with or without microbial infection. It occurs as a result of an accident or a cut with a sharp edged object. It can be caused by exploitation of tissues by physical, chemical, thermal, microbiological, or immunological means. Wound healing is the process of restoring damaged tissue's natural structure and functioning. Recovery is a natural process in which the body heals itself from tissue damage, although the rate of healing is sluggish and the risk of microbial infection is considerable. This increases the demand for a substance that accelerates the healing process. Wound healers are one of the most urgent needs in the vital

medicaments for soldiers, and they can enable injured soldiers return to the battlefield as soon as feasible.

A wound healer plant also reduces the need for other drugs, such as antibiotics, as well as their potential side effects. (Lazarus et al., 1994.) India has a long history of herbal medicine knowledge. Tribal people in India use a variety of plants, plant extracts, decoctions, and pastes to treat cuts, wounds, and burns. Aside from that, there is no synthetic drug formulation on the market that can claim to have wound-healing properties. The drugs available are either bacteriostatic or bactericidal, and healing is purely natural in these cases ( Nguyen., et al 2009).

### **Classification of Wound**

The etiology, location, type of injury or presenting symptoms, wound depth and tissue loss, or clinical appearance of the wound can all be used to classify wounds. Wounds are classified as open or closed wounds based on the underlying cause of wound formation, and as acute or chronic wounds based on wound healing physiology. (Kumar *et al* 2007; Robert *et al* 1998; Strodt becket *al*, 2001; Robert *et al*,1998).

**Open wounds:** Wounds that have not healed; Laceration or tear wound, Incised wound  
Abrasions, puncture wounds, penetrating wounds, and gunshot wounds are all examples of superficial wounds.

**Closed wounds:** Chronic wounds are those that take a long time to heal or that recurs frequently. Contusions or bruises, hematomas or blood tumours, Crush injury, and other closed wounds

**Acute wounds:** surgical incisions

**Chronic wounds:** wounds either require a prolonged time to heal or recur frequently

### **Physiology of Wound Healing**

#### **Cellular activity**

According to Thomson (2006), the healing process involves two distinct processes that restore normal structure and function.

#### **Regeneration**

Proliferation of parenchyma cells which results in complete restoration of original tissue. On the basis of capacity to divide cells are of three types as shown in Table. 1

#### **Table. 1: Regeneration of Wound**

Sr. No.	Type	Situation	Regeneration
1	Labilecells	Epidermis, respiratory tract, urinary tract, cells of lymph node and spleen	Under normal physiological condition, they are continuously dividing.
2	Stable cells	Parenchymal cells of liver, kidney pancreas, smooth muscles and cartilage cells	Cells are in G0 phase and enter cell cycle after situation.
3	Permanent cells	Nervous system, skeletal system, cardiac muscle.	Can't regenerate

## MATERIALS AND METHODS

Chandoli is a biodiversity hotspot in the Western Ghats. A detailed survey was conducted in the Chandoli region, and information on the use of medicine was documented (Figure 2). Standard monographs and flora were used to identify the plants (Cooks flora) Ethno medicinal information about the plants was gathered through interviews with local physicians and villagers who practised an indigenous system of medicine. Though ethnobotany offers a variety of approaches to plant research, we've only included resources that can help with medicinal plant research.

**Table 2.Wound Healing Herbals and Their Activities.**

Sr. No.	Botanical Name	Local Name	Parts Used	Reference
1.	<i>Achrynthusaspera</i>	Aaghada	Aqueous &ethanolic extracts of leaves	Ghoshet <i>al.</i> , 2011
2.	<i>Acoruscalamus</i>	Vekhand	Ethanolic extract of leaves	Jain <i>et al.</i> , 2010
3.	<i>Aeglemarmelos</i>	Bel	Methanolic extract of root	Jaswanthet <i>al.</i> , 2001; Udupaet <i>al.</i> 1994
4.	<i>Aloe vera.</i> <i>Aloe barbadensis</i>	Aloe/ kumara	Aqueous Extract & juice of leaves	Udupaet <i>al.</i> , 1994.
5.	<i>Argemonemexicana</i>	PiwalaDhotr a	Ethanolic &aqueous extracts ofleaves	Dash <i>et al.</i> , 2011
6.	<i>Azadirechtaindica</i>	KaduNeem	Methanol extract of leaves	Baruaet <i>al.</i> , 2007
7.	<i>Bryophyllumpinnatum</i>	Panphuti	Aqueous &	Mahmoodet <i>al.</i> ,

			alcoholic extract of Leaves	2002, Khan <i>et al.</i> , 2004
8.	<i>Buchanania lanzan</i>	Charoli	Alcoholic Extract	Chitra <i>et al.</i> , 2009
9.	<i>Butea monosperma</i>	Palas	Alcoholic bark extract	Sumitra <i>et al.</i> , 2005
10.	<i>Cedrus deodara</i>	Devadaru	Oil	Dikshita <i>et al.</i> , 1982
11.	<i>Centella asiatica</i>	Brahmi	Aq. Extract of flowers	Kumar <i>et al.</i> 1998 Shetty <i>et al.</i> , 2006
12.	<i>Clendula officinalis</i>	Zendu	Flower extract	Preethi <i>et al.</i> , 2001
13.	<i>Cuminum cyminum</i>	Jeera	Aqueous extract of leaves, Seed	Patil <i>et al.</i> , 2009
14.	<i>Curcuma longa</i>	Halad	Rhizomes	Mehra <i>et al.</i> , 1984
15.	<i>Cyperus rotundus</i>	Nagarmotha	extract of tubers	Puratchikody <i>et al.</i> , 2006
16.	<i>Eucalyptus globules</i>	Nilgiri	Oil	Hukkeri <i>et al.</i> , 2002
17.	<i>Euphorbia neriiifolia</i>	Dudhani	Aquous extract of latex	Rasika <i>et al.</i> , 1996
18.	<i>Ficus religiosa</i>	Peepal	Ethanollic & aqueous extracts of leaves & plant	Roy <i>et al.</i> , 2009; Garg <i>et al.</i> , 2011.
19.	<i>Ginkgo biloba</i>	Ginkgo	Ethanollic extract of stem	Bairi <i>et al.</i> , 2001
20.	<i>Glycyrrhiza glabra</i>	Jesthmadh	Vacuum dried Ethanollic extract of bark & root	Kishore <i>et al.</i> , 2001
21.	<i>Helianthus annuus</i>	Sunflower	Leaves, seeds, flowers, roots	Subashini <i>et al.</i> , 2012
22.	<i>Hydnocarpus weighuana</i>	Chaulmogra	oil	Oommen <i>et al.</i> , 1999
23.	<i>Indigofera enneaphylla</i>	Indigofera	Alcoholic extract of aerial parts	Hemalatha <i>et al.</i> , 2001
24.	<i>Jasminum auriculatum</i>	Jasmine	Ethanollic extract of leaves & flowers	Deshpande <i>et al.</i> , 1967
25.	<i>Lantana camara</i>	Chaturangi / Ghaneri	Ethanollic extract of Leaf juice	Nayak <i>et al.</i> , 2009
26.	<i>Neumbonuciera</i>	Kamal	Methanollic Extact of rhizomes	Mukherjee <i>et al.</i> , 2000
27.	<i>Ocimum tenuiflorum</i> , <i>Ocimum sanctum</i>	Tulsi,	Ethanollic extract of whole part	Udupa <i>et al.</i> , 2006
28.	<i>Opuntia ficus indica</i>	Nivdung	Methonolic extracts of stem	Park <i>et al.</i> , 2001
29.	<i>Phyllanthus embilica</i>	Amla	Ethanollic extracts of fruits	Suguna <i>et al.</i> , 2000
30.	<i>Scrophielarianodosa</i>	Figwort	Seeds, pods	Stevenson <i>et al.</i> ,

				2002
31.	<i>Solanumxanthocarpum</i>	VishariVang e	Ethanollic extract of leaves &fruits.	Dewanganet <i>al.</i> , 2012
32.	<i>Terminaliachebula</i>	Hirada	Alcoholic extract of leaves &fruit	Sagunaet <i>al.</i> , 2002
33.	<i>Thespesiapopulnea</i>	Paras-pipal	Aq. Extract of fruit	Nagappa et al., 2001
34.	<i>Tridaxprocumbens</i>	Gudhagemod i	Whole plants extract &alcoholicextract of leaves	Diwanet <i>al.</i> , 1983; Rainaet <i>al.</i> ., 2008

## RESULTS

A medicinal plant survey was carried out in the Chandoli region. Due to its wide range of climate and topography, it is a biodiversity hotspot in the Western Ghats and a source of important medicinal plant diversity. 35 plants were chosen for the study and recorded in Tabular form with regard to their local name, botanical name, part(s) used, and medicinal uses.

## CONCLUSIONS

A number of plants used traditionally by India's tribal people have not been validated or evaluated, despite the fact that traditional and conventional claims have been made. In general, pharmacologists should conduct scientific research into traditional medical systems and validate their findings by screening plants and plant extracts for pharmacological activity. This review focused on the pharmacological reports of plant/plant extracts in the development of an acceptable wound healing preparation, which, if properly validated and proven scientifically, can act as a substitute or even replace modern wound healing agents. Plants, which are a gift from nature and have traditional knowledge, provide excellent raw material for the treatment of various diseases and disorders, despite the major drawbacks associated with synthetic compounds.

Wound healers are available, just as they are in the allopathic medical system, but traditional knowledge in the form of literature provides a number of traditional and household preparations for those purposes. Natural products could be used to discover new wound healers, according to preliminary scientific research on plants.

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## REFERENCES

- Bairy K.L., Rao C.M. Wound healing profile of Ginkgo biloba. J Nat Rem. 2001; 25-27.
- Barua C.C., Talukdar A., Barua A.G., Chakraborty A., Sarma R.K., Bora R.S. Evaluation of the wound healing activity of methanolic extract of Azadirachta indica (neem) and Tinospora cordifolia (guduchi) in rats. Pharmacology online. 2010;1: 70-77.
- Chitra P., Sajithlal G.B., Chandrakasan G. Influence of Aloe vera on collagen turnover in healing of dermal wounds in rats. Ind J of Exp Biol. 1998;36:896-901.
- Dash G.K., Murthy P.N. Evaluation of Argemone Mexicana Linn. Leaves for wound healing activity. J Nat Prod Plant Resour. 2011; 1:46-56.
- Deshpande S.M., Upadhyaya R.R. Chemical studies of Jasminum auriculatum (VAHL) leaves. Curr Sci, 1967;36:233-234.
- Dewangan H., Bais M., Jaiswal V., Verma V.K. Potential wound healing activity of the ethanolic extract of Solanum xanthocarpum Schrad and wendl leaves. Pak J Pharm Sci. 2012;25:189-194.
- Dikshit A., Dixit S.N. Cedrus oil – a promising anti-fungal agent. Indian Perfumer, 1982;26:216-227.
- Diwan P.V., Tillo L.D., Kulkarni D.R. Steroid depressed wound healing and Tridax procumbens. Indian J. Physiol. Pharmacol, 1983;27:32- 36.
- Garg V.K., Paliwal S.K. Wound-healing activity of ethanolic and aqueous extracts of Ficus benghalensis. J Adv Pharm Technol Res. 2011;2:110-114.
- Ghosh P.K., Gupta V.B., Rathore M.S., Hussain I. Wound healing potential of aqueous and ethanolic extracts of apamarga leaves. Int J Green Pharm. 2011;5:12-15.
- Hemalatha S., Subramanian N., Ravichandran V., Chinnaswamy K. Wound healing activity of Indigofera enneaphylla Linn. Indian J Pharm Sci. 2001;63:331-333.
- Hukkeri V.T., Karadi R.V., Akki K.S., Savadi R.V., Jaiprakash B., Kuppast J., Patil M.B. Wound healing property of Eucalyptus globulus leaf extract. Indian Drugs. 2002; 39: 481–483.
- Jain N., Jain R., Jain A., Jain D.K., Chandel H.S. Evaluation of wound-healing activity of Acorus calamus Linn. Nat Prod Res. 2010;24:534-541.
- Jalalpure S., Agrawal N., Patil M.B., Chimkode R., Tripathi A. Antimicrobial and wound healing activities of leaves of Alternanthera sessilis Linn. Int J Green Chem., 2008; 2: 141-144.
- Jaswanth A., Loganathan V., Manimaran, S., Rukmani, S. Wound healing activity of Aegle marmelos. Indian J Pharma Sci. 2001;63:41–44.
- Kishore G.S., Kumar B.S., Ramachandran S., Saravanan M., Sridhar S.K. Antioxidant and wound healing properties of Glycyrrhiza glabra root extract. Indian Drugs. 2001;38: 355–357.

- Kumar B, Vinaykumar M, Govindarajan R, Pushpangadan P, Ethanopharmacological approaches to wound healing exploring medicinal plants of India, *J Ethanopharmacol*, 2007;114:103-113.
- Kumar S., Parmeshwaraiyah S., Shivkumar HG. Evaluation of topical formulations of aqueous extract of *Centella asiatica* on openwounds in rats. *Ind J Exp Biol*. 1998;36:569-572.
- Lazarus GS., Cooper DM., Knighton DR., Margolis DJ., Pecoraro RE., Rodeheave, G., Robson MC. Definitions and guidelines for assessment of wounds and evaluation of healing, *Arch Dermatol*, 1994; 130: 489-493
- Mahmood K., Patil PK. Influence of bryo phylum pinnatum (lam.) Leaf extract on wound healing in albino rats. *Ind J Pharmaco*. 2002;34:101.
- Mehra K.S., Mikuni I., Gupta U., Gode KD. *Curcuma longa* (Linn) drops in corneal wound healing Tokai. *J Expt Clinical Med*. 1984;9: 27-31.
- Mukherjee P.K., Mukherjee K., Pal M., Saha BP. Wound healing potential of *Nelumbanucifera* (Nymphaeaceae) rhizome extract. *Phytomedicine*. 2000;7:66-73.
- Mukherjee P.K., Suresh B. Studies on in vivo wound healing activity of leaf extract of *Hypericummysorensense* with different wound models in rats. *Nat Product Sci*. 2000;6: 73-78.
- Nagappa A.N., Cheriyan B. Wound healing activity of the aqueous extract of *Thespesiapopulnea* fruit. *Fitoterapia*. 2001;72:503-506.
- Nayak BS., Raju SS., Eversley M., Ramsuhag A. Evaluation of wound healing activity of *Lantana camara* L. A preclinical study. *Phytother Res*. 2009;23:241-245.
- Nguyen, DT. Orgill DP, Murphy GF. Chapter 4: The Patho physiologic Basis for Wound Healing and Cutaneous Regeneration. *Biomaterials for Treating Skin Loss*. 2009:25-57.
- Oommen S.T., Rao M., Raju C.V. Effect of oil of *Hydnocarpus* on wound healing. *Int J Lepr Other Mycobact Dis*. 1999;67:154-158.
- Park E. H. K., and Chun M.J. Wound healing activity of *Opuntia ficus-indica*. *Fitoterapia*. 2001;72:165-167.
- Patil D.N., Kulkarni A.R., Shahapurkar A.A., Hatappakki B.C. Natural Cumin Seeds for Wound Healing Activity in Albino Rats. *Int J Biolchem*. 2009;3:148-152.
- Preethi K.C., Kuttan R. Wound healing activity of flower extract of *Calendula officinalis*. *J Basic Clin Physiol Pharmacol*. 2009;20:73-79.
- Puratchikody, A., Devi C.N., Nagalakshmi, G. Wound healing activity of *Cyperus rotundus* Linn. *Indian J Pharm Sci*. 2006; 68:97-101.
- Raina R., Prawez S., Verma P., Pankaj N. Medicinal plants and their role in wound healing. *Vet Scan*. 2008; 3:1-24.
- Rasik A.M., Shukla A., Patnaik G.K., Dhawan B.N., Kulshrestha D. K., Srivastava S. Wound healing activity of latex of *Euphorbia neriifolia* Linn. *Indian J Pharmacology*. 1996; 28: 107-109.
- Roberts PR, Black KW, Santamauro JT, Zaloga GP, Dietrypeptides improve wound healing following surgery, *Nutrition*, 1998;14:266-269.
- Roy K., Shivakumar H., Sarkar S. Wound healing potential of leaf extracts of *Ficus religiosa* on wistar albino strain rats. *Int J Pharm Tech Res*. 2009;1:506-508.



- ShettyBS., Udupa SL., Udupa AL., Somayaji SN. Effect of *Centellaasiatica* L. (Umbelliferae) on normal and dexamethasone suppressed wound healing in Wistar Albino rats. *J Lower Extremity Wounds*. 2006;5:137–143.
- Stevenson P.C., Simmonds H.S., Sampson J. J., Houghton P.J., Grice P. Wound healing activity of acylated iridoid glycosides from *Scrophularianodosa*. *Phytotherapy Res.* 2002; 16:33-35.
- Strodtbeck F, Physiology of wound healing, Newborn Infant. *Nurs Rev*, 2001;1: 43-45.
- Subashini R., SritharanUmamaheswariRakshitha US. Phyto chemical screening, antimicrobial activity and in vitro antioxidant investigation of methanolic extract of seeds from *Helianthus annuus*L. *CheSci Rev Lett*. 2012; 1: 30–34.
- Suguna L., Singh S., Sivakumar P., Sampath P., Chandrakasan G. Influence of *Terminaliachebula* on dermal wound healing in rats. *Phyther Res*. 2002;16:227-231.
- Suguna, L., Sumitra, M., Chandrakasan, G. Influence of *Phyllanthusemblica* extract on dermal wound healing in rats. *J Med Aro Plants*. 2000; 32: 2–3.
- Sumitra M., Manikandan P., Suguna L. Efficacy of *Buteamonosperma* on dermal wound healing in rats. *J Biochem Cell Biol*. 2005;37: 566–573.
- Thomson J, Skin function and Wound healing physiology. *Wound essentials*. 2006;1:8-17.
- Udupa S.L., Shetty S., Udup A.L., Somayaji S.N. Effect of *Ocimum sanctum* Linn. on normal and dexamethasone suppressed wound healing. *Indian J Expt Biol*. 2006;44: 49–54.