

Popular Article

Native Medicinal Plants: An Alternate Choice for Wound Healing

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Introduction

A Wound is a split in the epithelial integrity of the skin including deeper punctures with disruption ending to the dermis, subcutaneous fat, fascia, muscle or even bone (Enoch and Price, 2004). Wound healing involves a series of cellular and biochemical events in a coordinated manner in order to restore the function of epidermis and dermis (Stadelmann et al., 1998) and occurs in 3 phases Viz: Inflammation, proliferation and remodeling (Iba et al., 2004). Synthetic drugs like antibiotics, antiseptics, de-sloughing agents are generally used to treat the wounds which have the limitation of side effects and residues in tissues which is of public health concern in case of animals raised for its meat.

Alternately, Plants and plant-based constituents have been extensively used for treatment and management of wounds since ages (Sharma et al., 2021). Many studies have shown that use of medicinal plants improve wound healing in diabetic, infected and opened wounds by inducing healing and regeneration of lost tissue by various mechanisms. The definite pharmacological action is due to the presence of bio active constituents like alkaloids, terpenoids, flavonoids, essential oils, saponins and phenolic compounds (Edeoga et al., 2005). This article summarizes the details of such locally available medicinal plants used in wound healing.

Medicinal plants with wound healing activity:

- 1) Aloe Vera



Scientific name: *Aloe barbadensis miller*
Useful part: Leaves

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Mechanism of action:

- Increases the collagen synthesis and collagen content
- Modifies collagen composition and increases collagen cross linking thus accelerating the wound contraction and enhancing the breaking strength of resulting scar tissue.

1) Turmeric

Scientific name: *Curcuma longa*

Useful part: Root

Active principle: Curcumin

Mechanism of action:

- It promotes fibroblast migration, granulation tissue formation, re epithelization and collagen deposition,
- It promotes wound contraction and scar tissue formation



2) Ginseng

Scientific name: *Panax ginseng*

Useful part: Root and Leaves

Active principle: Ginsenoside

Mechanism of action:

- Strengthen keratinocyte migration and induce proliferation
- improves healing following laser burning and excisional wound injury.



3) Neem

Scientific name: *Azadirachta indica*

Useful part: leaves and seed kernels

Active principle: Nimbin, Nimbidine, Nimbolide

Mechanism of action:

- Increases migration of fibroblast cells, epithelial cells, and synthesis of extracellular matrix together with collagen during the healing process.
- Promotes angiogenesis and fastens wound healing.



4) Burdock

Scientific name: *Arctium lappa*

Useful part: Root and Leaves

Active principle: Arctigenin

Mechanism of action:

- Stimulates collagen synthesis and helps in faster wound contraction,
- Promotes angiogenesis, vascular dilation



5) Centella (Gotukola)

Scientific name: *Centella asiatica*

Useful part: Leaves

Active principle: Asiaticoside and madecassoside

Mechanism of action:

- Promotes collagen remodeling and synthesis of glycosaminoglycans
- Promotes epithelialization and stimulates scar maturation by producing type-I collagen deposition
- Effective in treatment of small wounds, hypertrophic wounds as well as burns



6) Periwinkle

Scientific name: *Catharanthus roseus*

Useful part: Flower

Active principle: catharanthine, vindoline, vinblastine and vincristine

Mechanism of action:

- Improves wound contraction and hydroxyl proline content of granulation tissue
- Decreases epithelialization period and has antibacterial activities



7) Yarrow/Soldiers's wound wort

Scientific name: *Achillea millefolium*

Useful part: Leaves and flowers

Active principle: achilleine, trigonelline and betonicine

Mechanism of action:

- Accelerates the healing process and confers breaking strength to the healed wound
- Significantly increases rate of wound contraction



9) Pot marigold

Scientific name: *Calendula officinalis*

Useful part: Flowers

Active principle: saponins, triterpenes, alcohol triterpenes, fatty acid esters, carotenoids, flavonoids, coumarines, essential oils, hydrocarbons, and fatty acids

Mechanism of action:

- Shows faster resolution of the inflammation phase with increased production of granulation tissue
- Stimulates angiogenesis
- Increases production of type I,II and III Collagen



10) Chamomile

Scientific name: *Matricaria chamomilla*

Useful part: flowers

Active principle: α-bisabolol, chamazulene, azulenesse, farnesene

Mechanism of action:

- Promotes faster epithelialization,
- Increases rate of wound contraction, together with the increased wound-breaking strength and hydroxyproline content



Conclusion

Wounds are a significant socio-economic burden to animal owners of low income group due to their high prevalence and recurrence especially in grazing and farm animals which can be efficiently managed by using the locally available herbs. Many of the plants used for wound healing are shown to have good results; however, scientific validation of these plants is needed.

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