

Review on Herbal Medicines Used for Wound Healing

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Abstract: Wound healing is an integrated cellular and biochemical process of restoring normal structure functions of damaged tissue. Healing is a natural phenomenon by which body itself overcome the damaged to the tissue but the rate of healing is very slow and chance of microbial infection is high. Improvement in healing process can be accomplish either shorten the time required for healing or to minimize the undesired consequences. India has a rich tradition of plant-based knowledge on healthcare system. Several herbs and medicinal plants proved to be a wound healers were identified and formulated for treatment and management of wounds. The present review attempt to highlight some herbs and medicinal plants proved to be scientifically used for the treatment of cuts and wounds as a wound healer.

Keywords: Herbal Medicines.

I. INTRODUCTION

The wound is defined as loss or disturbance of the proper anatomic functioning of the tissue. In this damage, microbes can reach the site of injury, and this could be very dangerous^[1]. The microbial attack is very frequent as well because the wounds are cuts or openings of the tissue. Therefore, injured persons are vulnerable to many diseases. Wounds can occur because of different events; thus, the appropriate method of treatment should be used. There are different stages of wound healing viz Hemostasis Phase, Inflammatory phase, Proliferative phase, and Remodeling phase. The metabolic disturbance also affects these phases resulting in delayed healing. According to a study in Colombia, people of small villages and countries make native herbal medicines and because of this treatment, there are very few chances of infection of resistant organisms^[2]. There are different herbs and other plants used for the wound healing i.e., Aloe vera "Aloe barbadensis miller", Neem "Azadirachta indica", False Daisy "Eclipta prostrata", West Indian Lantana "Lanatana camara" and tridax daisy "Tridax procumbens". The purpose of this review is to investigate some herbal plants and find their role and the process of wound healing^[3].

II. CLASSIFICATION OF WOUND

Wounds may be classified by several methods :

- **Chronic wounds** - Chronic wounds are wounds that have not gone through the usual healing stages and hence reach a state of pathologic inflammation. They need extended healing time.
- **Closed wounds** - The blood escapes from the circulatory system in closed wounds but stays inside the body. It becomes evident in the form of bruises.
- **Open wounds** -Blood leaks from the body through an open wound and bleeding is clearly noticeable. The open wound may be divided further into categories according to the source causing the wound.
- **Incised wounds** - This is a wound with no loss of tissue and minor damage to tissue. It is caused primarily by sharp objects like a scalpel or knife^[4]

STEPS INVOLVE IN WOUND HEALING:

1. Primary union of wound : This is seen when wound is characterized by small, clean and uninfected condition without much loss of cells. It includes following steps :

- (a) Haemorrhage
- (b) Inflammation

- (c) Proliferation and migration of basal cells of epidermis towards incision
- (d) Fibroblast and new collagen fibers invasion

2. Secondary union of wound : Characters of secondary union include open with large tissue defect having excessive loss of cells and tissue .^[5]

Pharmacological activity of herbal supporting wound healing is:

- a) Anti-inflammatory [reduce the inflammation]
- b) Antioxidant activity [control the oxidation, pus formation]
- c) Antimicrobial activity [control the microbial infection and other contaminated factor]
- d) Analgesic activity [relaxation from pain sense]^[6]

III. FACTORS INFLUENCING HEALING

two types of factor influencing the wound healing .

Local factors: includes

- Infection by tissue organization which delay healing
- Poor blood supply which shows healing
- Movement of affected part of delay healing

Systematic factors : includes

- Wound healing is rapid in young and slow in aged people
- Nutritional deficiency of vitamin C and zinc delay healing
- Haematological abnormalities also affects healing^[7]

IV. MECHANISM OF WOUND HEALING

Response to surgical or traumatic injury Induction is immediate and no damaged tissue or wound It then goes through three phases to bring the finale repair:

The Inflammatory Phase Prepares the Area for Healing Cause swelling and fix the wound, it is painful and restricts movement. The fiber plasticity phase reconstructs the structure, the transformation stage gives the final shape.

The Inflammatory Phase:

The inflammatory phase begins shortly thereafter Injuries that usually last 24 to 48 hours In some cases, it lasts up to 2 weeks. Phase initiates hemostatic mechanisms and immediately stops blood loss at the wound site. This phase is characterized by: Vasoconstriction and platelet aggregation to induce blood coagulation and subsequent vasodilation and Phagocytosis that causes inflammation at the wound site.

Fibroblastic Phase:

The second stage of wound healing is the fibrogenic stage, which lasts up to 2 days to 3 weeks after the inflammatory stage. This phase consists of three steps granulation, contraction and epithelialization. In the granulation step fibroblasts form a bed of collagen, New capillaries are formed. Fibroblasts are Various substances essential for wound healing, including glycosaminoglycans and collagen. Inseam of Shrink Wound edges shrinks to reduce defects. In the third step epithelial tissue is formed at the wound site.

The Remodeling Phase:

This stage lasts from 3 weeks to 2 years. At this stage, new collagen is formed. Tissue tensile strength is increased by intermolecular cross-linking of collagen through vitamin C dependent hydroxylation. Scars are flattened, Scar tissue becomes 80% as strong as the original tissue. Since then, the wound-healing activity of plants has been I looked it up in folklore. Many Ayurvedic herbal plants have one. It plays important role in wound healing. Extensive research

performed in the field of wound healing Management with medicinal plants. Herbal medicine in wound care includes disinfection, debridement Provides a moist environment to natural forms of healing processes [8].

V. COMMONLY USED MEDICINAL PLANTS AS WOUND HEALERS

People from both developed and developing countries depend upon herbal therapeutics for primary healthcare. The use of traditional medicine is determined by various factors such as availability, affordability, and its firm embedment in the beliefs of people. [9]

The following overview describes the most important medicinal plants:

1. BASIL



This extract is derived from the plant of *Ocimum sanctum* belonging to family Labiatae. It has been widely grown throughout the world and commonly cultivated in gardens. Traditionally *Ocimum sanctum* is used in malarial fevers, gastric disorders and in hepatic infections. *Ocimum sanctum* leaves are also used in bronchitis, ringworm and other cutaneous diseases and earache. The leaves are used as a nerve tonic and to sharpen memory. *Ocimum sanctum* leaves are abundant in tannins like gallic acid, chlorogenic acid etc and also contain alkaloids, glycosides, and saponins along with the volatile oil. The major active constituent of Holy basil leaves include urosolic acid. It contains 70% eugenol, carvenol and eugenol-methyl-ether. [10]

NEEM



It consist of the fresh or dried leaves and seed oil of *Azadirachta indica*. It belongs to family meliaceae. Alcoholic extract of neem is useful in eczema, ringworm and scabies. Neem leaf extracts and oil from seeds has proven antimicrobial effect. This keeps any wound or lesion free from secondary infections by microorganisms. Clinical studies have also revealed that neem inhibits inflammation as effectively as cortisone acetate; this effect further accelerates wound healing. Neem oil contains margoic acid, glycerides of fatty acids, butyric acid and trace valeric acid. Alcoholic extract of neem is useful in eczema, ringworm and scabies. Neem leaf extracts and oil from seeds has proven antimicrobial effect. This keeps any wound or lesion free from secondary infections by microorganisms. Clinical studies have also revealed that neem inhibits inflammation as effectively as cortisone acetate; this effect further accelerates wound healing. [11]

TURMERIC



It is also called Indian saffron, curcuma. It consists of dried as well as fresh rhizomes of the plant known as curcuma longa belonging to family zingiberaceae. It contains not less than 4% of volatile oil. India account for as much as 90% of the total output of the world. Curcuma longa is the main species of commerce and is cultivated for its rhizomes in India, China and in Sri Lanka. India is the major grower with almost 80,000 hectares under the crop producing 1, 44,000 tonnes per annum. The plants are grown for 7 to 9 months after which the rhizomes are harvested, cooked, dried and then processed for powder, oleo-resin and curcumin. The extraction of powder is carried out by using solvents, water or both. It contains about 5% of volatile oil, resin. Starch grains and curcuminoids which is the chief constitutes of curcumin, Volatile oil, content sesquiterpenes such as α and β pinene, α -phellandrene, camphor, zingiberene. It is used as a condiment or spices, and colouring agent, especially for ointments and creams. It is used for the detection of boric acid. Traditionally it has been proved as antiinflammatory, anticancer, antiseptic .^[12]

VI. CONCLUSION

As we become more familiar with herbal extracts and isolates and apply commonly accepted scientific methods to study plants and their extracts from a physiological and pharmacological point of view, herbs used to treat wounds. The number of products continues to grow. The present study revealed that traditional medicines are still in common use by the kani tribal communities. Much research has been centered on wound care, with emphasis on new therapeutic methods and the advancement of acute and chronic wound treatment techniques in Ayurveda (herbal).

REFERENCES

- [1]. Lazarus GS, Cooper DM, Knighton DR, Margolis DJ, Pecoraro RE, et al., (1994) Definitions and guidelines for assessment of wounds and evaluation of healing. Arch Dermatol 130(4): 489-93 ISSN: 2642-1747
- [2]. Vallejo MC, Pérez Rincón MA, Martínez Alier J (2011) Metabolic Profile of the Colombian Economy from 1970 to 2007. Journal of industrial Ecology 15(2): 245-267 ISSN: 2642-1747
- [3]. Budovsky A, Yarmolinsky L, Ben Shabat S (2015) Effect of medicinal plants on wound healing. Wound Repair Regen 23(2): 171-183 ISSN: 2642-1747 .
- [4]. Nagori BP, Salonki R (2011) Role of medicinal in wound healing. Res J Med Plant 5(4):392-405
- [5]. www.japonline.com by accord 25-04 18 ISSN 0974-3618 & 0974-360X
- [6]. www.googleweblight.com by accord 20-04- 18 ISSN 0974-3618 & 0974-360X
- [7]. Thomas Hess. Checklist for factors Affecting Wound Healing. Adv Skin Wound Care. 2011;24:192 ISSN 2231-3354
- [8]. Shivaji Pandurang Payghan¹ , Mayuri N. Shrikhande² , Bachal Rushikesh Gajanan³ , Shingare Rahul Dnyaneshwar⁴ ISSN: 2249-7781
- [9]. Saini, Sapna, Anju Dhiman and Sanju Nanda. "Traditional Indian medicinal plants with potential wound healing activity: a review." International Journal of Pharmaceutical Sciences and Research, Vol. 7, No. 5, 2016, p. 1809 ISSN No: 2319-5886 .
- [10]. Udupa SL., Shetty S., Udup A.L., Somayaji SN. Effect of Ocimum sanctum Linn. on normal and dexamethasone suppressed wound healing. Indian J Expt Biol. 2006;44: 49-54 ISSN 2231-3354
- [11]. Raina R., Prawez S., Verma P., Pankaj N. Medicinal plants and their role in wound healing. Vet Scan. 2008; 3:1-24 ISSN 2231-3354
- [12]. Mehra KS., Mikuni I., Gupta U., Gode KD. Curcuma longa (Linn) drops in corneal wound healing Tokai. J Expt Clinical Med. 1984;9: 27-31 ISSN 2231-3354