THE IMPACT OF VARIOUS INDIAN MEDICINAL PLANTS AS A WOUNDS HEALER

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ABSTRACT

Many requirements of human beings are fulfilled by the plants. They also prevent and cure various diseases of human beings including wounds and ulcers. Plants and their extracts have immense potential for the management and treatment of wounds. The management of wound has been a major problem since the early stages of medical science. In spite of brilliant progress of in surgery, wound management still remains a subject of speculation. The early manifestation of unsatisfactory wound healing gives rise to serious complications which can lead to prolonged healing and even death in surgical practice. These natural medicines for wound healing are cheap, affordable and purportedly safe as hyper sensitive reactions are rarely encountered with the use of these agents. These natural agents induce healing and regeneration of the lost tissue by multiple mechanisms. However, there is a need for scientific validation, standardization and safety evaluation of plants of the traditional medicine recommended for healing of the wounds.

KEYWORDS: Nimba, Manjistha, Arka, Daruharidra, Vrana (Wound/Ulcer).

INTRODUCTION

The disruption of the cellular and anatomic continuity of a tissue is called as wound. It may be produced by physical, chemical, thermal, microbial or immunological agents. In general, wound healing is a normal and continuous process which may be delayed due to deficiency of certain vitamins, trace elements and proteins.

In Ayurveda, the wound (Vrana) has been described as a main subject in Sushruta Samhita by Sushruta, the father of Indian surgery. He has described the wound from its different aspects right from the definition, causes etc. to the treatment of the scar tissues. Vrana (wound) is stated as1-2 "Vrana gatavivarchane" i.e. destruction and discoloration of viable tissue due to various etiology. Agnivesha expanded the knowledge of wound and gave its detailed description including classification, sign, symptom, prognosis and thirty six Upakrama (essential procedures) for its management3.

Type of wounds

Ayurveda classifies the Vrana into two types-

(a) Dushta vrana: (i.e. chronic wound/Non-healing ulcers) are the contaminated wounds which require specific purification, called Vrana shodhana, without which healing cannot be initiated in the wounds.

(b) Shuddha vrana: The cause of such Vrana is generally a surgeon’s knife & this type of Vrana does not require any specific treatment except its protection from various contaminations.

Mechanism of wound healing

The wound healing is a natural phenomenon which starts immediately after injury and continues in sequential manner till the formation of a healthy scar. This event is not uniformly present as a rule under different conditions of wound. Certain general factors such as age, nutritional deficiency, hormonal imbalance and various systemic diseases like anaemia, uraemia, jaundice, diabetes etc. and certain local factors like position of skin wound, blood supply, tension, infection, foreign body etc. either alone or in combination influences the normal sequence of wound healing5.
Upon injury to the skin, a set of complex biochemical events takes place in a closely orchestrated cascade to repair the damage. The classic model of wound healing is divided into four sequential, yet overlapping phases (1). Haemostasis (2). Inflammatory (3). Proliferative and (4). Remodeling.

The phase of maturation and remodeling is not only complex but fragile and susceptible to interruption or failure leading to the formation of chronic non-healing wounds. Factors which may contribute to this include diabetes, venous or arterial disease, old age, and infection. Delayed wound healing in diabetes is due to microangiopathy, atherosclerosis, and proliferation of bacteria due to high blood sugar.

Healing methods are same in different system of medicine whatever it may be allopath or Ayurveda i.e. to protect wound from microorganisms and to increase granulation tissue formation and epithelization.

**Wound healing plants**

In Ayurveda, many plants having the wound healing properties are described. Out of which, some plants are described below that could prove beneficial in therapeutic practice.

**Nimba (Azadirachta indica A. Juss.)**

In Ayurveda, it is indicated in many disorders especially in case of wound. Nimba seed in form of oil is externally applied to wound and it performs good Ropana (healing) in Vrana. The Bark of Azadirachta indica is being used by several Indian tribes as an antifungal, antiseptic, astrigent in several skin diseases, boils and blisters, eczema etc. from centuries. Modern scientific research has proved it to be antimicrobial, fungi static, fungicidal, anti-inflammatory, antioxidant, and free radical scavenger, useful in ulcers, infections and skin diseases. Bark of Azadirachta indica contains polyphenols which are well known powerful antioxidants that scavenge free radicals, promote dermal fibrosis and improve wound healing and acts as an anti-inflammatory reagent.

**Manjistha (Rubia cordifolia Linn.)**

According to Charaka, Manjistha churna & its Kwatha are better for Shodhana karma. The root of Manjistha is sweet, bitter, astrigent, thermogenic, anti-inflammatory, anodyne, antiseptic, digestive, carminative, antidysenteric and diuretic etc. and useful in leprosy, skin diseases, leucoderma, pruritus, wounds, ulcers etc. It is considered to be traditionally useful as an external application in inflammations, ulcers and skin diseases. The methanolic extract of *R. cordifolia* has anticancer activity. The triterpenes isolated from petroleum ether extracts of *R. cordifolia* posses anticonvulsant property. The ethanolic extract of *R. cordifolia* has lipoxygenase inhibitory activity and its ethyl acetate fraction is most potent in this regard.

**Haridra (Curcuma longa Linn.)**

The paste of Haridra along with Daruharidra, Yashtimadhu, leaves of nimbis etc. purify the wounds while Sushruta has clearly said that it is good for *Sadyovrana ropana*. Its wound healing, anti-inflammatory and antimutagenic activities have been convincingly demonstrated. The part used are rhizomes and it contains curcumin, turmeric oil or turmerol. Curcumin has potent anti-inflammatory and analgesic activities.

**Arka (Calotropis procera (Ait.) R. Br.)**

Its leaves are used to cover wound. According to Sahasrayoga, oil cooked with latex of *Snuhi* and Arka along with bee wax heals chronic ulcers. Its latex has been reported to possess wound healing activity as well as antimicrobial activity. As an antioxidant and anti-diabetic agent, its dry latex efficacy was comparable with the standard antidiabetic drug, glibenclamide which indicates its usefulness in cases of delayed wound healing as seen in diabetes mellitus.

**Daruharidra (Berberis aristata Dc.)**

The oil made from juice of Durva along with the paste of bark of Daruharidra is an efficacious remedy for wound healing. In wounds, oil cooked with Daruharidra, Vidanga and Kampillaka is useful. Its active principle is berberine which is shown to be active against variety of microorganisms like bacteria, viruses, fungi, protozoa, helminthes and chlamydia. Antipruritic, antipyretic, anti hypertensive and pigment inducing activity have been reported with berberine.

**Other plants useful in wound**

In Ayurveda, there are so many plants described for wound cleaning, wound healing, wound bursting, wound suppressing etc. These plants are used either singly or along with different other plants. Example are Ingudi (Balanites roxburghii Planch.), oil of which is useful in chronic and dirty wounds, Kadali (Musa paradisiaca Linn.), the mature and clean leaves of which remove the hidden pus from wound and favouring wound healing. Kampillaka (Mallotus
phillipinensis Muel-Arg.), the oil made from juice of Kampillaka along with the paste of bark of Daruheridra is an efficacious remedy for wound healing43, Lajjalu (Mimosa pudica Linn.) which is mixed with Chandan, Kamal and other plants and used to heal the wound44, Aguru (Aquilaria agallocha Roxb.), the oil of which (along with the oil of other plants) is useful in chronic ulcers, worms and skin disorders45.

Above mentioned plants are just some examples of wound healers. Ayurveda describes many other plants which are useful in wound like Tulasi (Ocimum sanctum Linn.), Kumari (Aloe vera Tourn ex Linn.), Vata (Ficus begalensis Linn.), Gular (Ficus glomerata Roxb.), Ashwattha (Ficus religiosa Linn.), Kadamba (Anceophalais indicus Miq.), Plaksha (Ficus lacor Buch-Ham.), Vetasa (Salix caprea Linn.), Karvira (Nerium indicum Mill.), Kutaja (Holarrhena antidysenterica (Linn.) Wall.), Snuhi (Euphoribia nerrifolia Linn.), Chandana (Santalum album Linn.), Kamala (Nelumbo nucifera Gartin.), Dhataki (Woodfordia fruticosa Kurz.), Khadir (Accacia catechu Linn.), Priyangu (Callicarpa macrophylla Vahl.), Lodhra (Symplocos racemosa Roxb.), Yashtimadhu (Gilcyrrhiza glabra Linn.) etc.

CONCLUSION
Wound healing is a normal physiological phenomenon starting just after injury but factors like nutritional deficiency, hormonal imbalance, systemic diseases and local factors such as infections, hematoma, and foreign body etc. delays normal healing resulting into non-healing ulcer. Plants and their extracts have immense potential for the management and treatment of the wounds. The wound healing through plants are cheap, affordable and safe as hyper sensitivity reactions are very rare. These natural agents induce healing and regeneration of the lost tissue by multiple mechanisms. However, there is a need for scientific validation, standardization and safety evaluation of these traditional medicinal plants before these could be recommended for healing of the wounds.

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