

ROLE OF KHADIR KWATH IN WOUND HEALING: A REVIEW ARTICLE**Dr. Vrushali Vaidya***

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ABSTRACT

Wound healing is a complex physiological process that restores the integrity of damaged tissues. Proper wound management is essential to prevent infection and promote rapid healing. In *Ayurveda*, wound management is described under *Vrana Chikitsa*, where several herbal drugs are recommended for wound cleansing (*Vrana Shodhana*) and healing (*Vrana Ropana*). *Khadir Kwath*, a decoction prepared from the bark of *Acacia catechu*, is widely used in *Ayurvedic* practice due to its antimicrobial, anti-inflammatory, and astringent properties. The presence of tannins and catechins in *Khadir* contributes to its wound-healing activity. This review aims to evaluate the role of *Khadir Kwath* in wound healing based on classical *Ayurvedic* literature and modern pharmacological studies. The drug helps in reducing infection, promoting granulation tissue formation, and accelerating wound contraction. Therefore, *Khadir Kwath* can be considered a useful herbal preparation for wound care, particularly in surgical wounds such as episiotomy in *Strirog & Prasutitantra*.

KEYWORDS • *Khadir Khadir Kwath Vrana Wound Healing Ayurveda***INTRODUCTION**

Sushruta the father of Indian surgery in 1000 BC has elaborated the concept of *Vrana*. *Sushruta* has elaborately explained sixty types of (*Shasti upakramas*) for the management of wounds to achieve good approximation, early healing, without complication and acceptable scar. He advocated numerous herbal drugs for local application as well as systemic use. His techniques are broadly classified as *Vrana Shodhana* (wound cleaning) and *Vrana Ropana* (wound healing). The concepts and principles of *Vrana* such as causes, classification, examination, treatment, bandaging, complications etc. mentioned in *Ayurved* classic *Sushruta Samhita* by *Acharya Sushruta* remained unchanged even in this 21st century *Sushruta* mentioned as leprotic wound, diabetic wound, tubercular wound are nonhealing in this advance era.

A wound is defined as the disruption of normal anatomical structure and function of tissues caused by physical, chemical, or microbial factors. Wound healing is a natural biological process that involves a sequence of cellular and biochemical events, including inflammation, proliferation, and tissue remodeling. In modern

medicine, wound management includes wound cleaning, infection control, and promotion of tissue regeneration.

Many herbal preparations are mentioned for these purposes. Among them, *Khadir* (*Acacia catechu*) is an important medicinal plant known for its wound-healing properties. *Khadir Kwath*, a decoction of *Khadir* bark, is commonly used for wound washing due to its antimicrobial and tissue-healing actions.

AIMTo review the role of *Khadir Kwath* in wound healing.**OBJECTIVES**

1. To understand the concept of wound healing in *Ayurveda*.
2. To study the pharmacological properties of *Khadir*.
3. To evaluate the role of *Khadir Kwath* in wound management.

MATERIALS AND METHODS

Collection of data was done by using *Ayurvedic Samhitas* like *Sushrut Samhita*, *Charak Samhita*, *Ashtang Hridaya*, *Dhanvantari Nighantu*, *Bhavprakash* and Standard online database. The drugs promoting Mechanism of

healing of wounds are elaborated that may Be found effective in general practice.

Vrana

Definition

व्रण गात्र विचूर्णने, व्रणयतीति व्रणः¹ सु.चि. १/६

“Gaatra” means tissue.

“Vichuranane” means destruction/break/rupture/discontinuity of body Tissue.

“वृणोति यस्माद् रुढेऽपि व्रणवस्तु न नश्यति ।

आदेह धारणात्तस्माद् व्रण इत्युच्यते बुधैः² (सु.सु. २१/४०)

The scar of the wound never disappears even after complete healing and it's remain throught out life hence it is called as *vrana*.

Types of Vrana

1. *Nija Vrana* – Caused by internal factors (*dosha* imbalance)- 16 types

2. *Agantuja Vrana* – Caused by external factors such as trauma or injury- 6 types

Agantuja vrana cause by trauma from *purusha, pashu, pakshi, vyaala, prapatana, prahara, tekshna aushadha, Agni, Visha, kapaala, Shringa*.

Types of *Agantuja vran* according to nature & size.

- | | |
|-------------------------|-------------------------|
| a. <i>Chinna Vran.</i> | b. <i>Bhinna Vran</i> |
| c. <i>Vidha Vrna</i> | d. <i>Kshata Vran</i> |
| e. <i>Pichhata Vran</i> | f. <i>Ghrushta vran</i> |

Shuddha vrana lakshana

Unaffected by the three *Doshas*.

Edges with a slight Blackish colour and having Granulation tissue.

Absence of pain.

Absence of secretion.

Even surface through out the wound area. Slimy surface.

Regular surface.

Dushta vrana

Extremely narrow or wide, mouthed, too soft, elevated or depressed, black or red or white coloured, too cold or hot.

Full of slough or pus or veins or flesh or ligaments or Putrid pus.

Upward or oblique course of suppuration. Pus runs into Cavity and fissures cadaverous smell.

Burning sensation, Redness, itching, pustules crop up around secrete with blood.

Ruhyaman Vrana

Absence of any type of discharge, presence of healthy and new granulation tissues yellowish colored wound, surrounding area of wound Is hard.

Samyak rudha Vrana

Edges: Firmly adhere.

Pain: No pain.

Swelling: Not Appears.

Leaves cicatrices of the Same line with the Surrounding skin.

Vrana vastu

Scar of the wound remains lifelong though wound is completely healed.

Vrana akar

Elongated Elliptical Rectangular Circular Triad.

Wound

1. Healing by first intension: When a wound is suture primarily with clips, sutures or adhesive materials, the wound healing occurs with minimum scarring and it is known as healing by first intention.

2. Healing by second intention: When there is irreparable skin loss or wound become infected and breaks open, primary Suturing is not possible.so the wound heals with more scar tissue and takes longer time to heal. This is known as healing by secondary intention.

Stages of Wound Healing

Modern medicine describes four phases of wound healing.

1. Hemostasis: It occurs within minutes of the initial injury. Process involves vasoconstriction, platelet aggregation, fibrin deposition and clot formation at the end.

2. Inflammation: It lasts upto 4 days after injury. It involves vasodilation, margination, diapedesis. Neutrophils and macrophages remove bacteria and debris.

3. Proliferation: Fibroblast proliferation and collagen deposition. Granulation tissue formation. Angiogenesis and epithelialization occur.

4. Remodeling: Collagen remodeling and strengthening of tissue. Scar formation. Tensile strength gradually increases.

Ayurvedic treatment focuses on cleaning the wound and promoting tissue regeneration, which corresponds to these healing stages.

Factors influencing wound healing

Age, Nutrition, Obesity, Repeated trauma, skin moisture, chronic condition, medication.

Khadir – Drug Review

खदिरः शीतलो दन्त्यः कण्डूकासारुचिप्रणुत् |

तिक्तः कषायो मेदोघ्नः कृमिमेहज्वरव्रणान् ||

श्वित्रशोथपित्तासपाण्डुकुष्ठकफान् हरेत्^[8] (भा.प्र.नि.वटादि वर्ग)

•Latin name: *Acacia catechu*

•Family: *Fabaceae*

•Parts used: bark, heartwood, catechu (*kattha*)

Ayurvedic Properties:

•*Rasa* : *Tikta* and *Kashaya*

•*Guna* : *Laghu, Ruksha*

•*Virya* : *Sheeta*

•*Vipaka* : *Katu*

•*Prabhava* : *kushtaghna*

•*Doshaghna*: *Kapha-Pitta Shamak*

• *Rogaghната*: *Aruchi, Atisara, Kaphaja kasa, Prameh, Kushtha, Twakarog, Raktapitta, Krimighna,*

Ruchivardhaka, Stambhana, Shonitasthapana, Mutrasangrahana, Kushthaghna, Kandaghna, Vrana ropaka.

Mode Of Action

- Kashay Rasa: Sandhan karma, Shoshana, Ropana, Sthambhana, Asravishodhana, lekha, artinashak, Shleshmapitta rakta prashaman, Samshoshan, Rakta shodhak.*
- Tikta Rasa: Dahaprashaman, Twakasthairiyakar, Lekhaniya, Kledashoshan, Puyashoshan.*
- Sheeta Virya: Mitigates pitta.*
- Laghu Guna: Vrana laghuta & dosha pachan.*
- Ruksha Guna: Lekhana, Kaphhaghna, Vranaropan*

Properties of Acacia Catechu leading to wound healing

- Khadir* is recognized for its ability to facilitate wound healing due to its antibacterial and antifungal attributes.
- It comprises specific chemicals that induce the contraction of skin cells, diminishing inflammation and fostering the recovery of wounds.
- Additionally, due to its antimicrobial properties it provides support for the healing process.
- The *Ropan*(healing) attribute of *Khadir* contributes to the expeditious recovery of wounds, diminishes swelling, and restores the skin's normal texture.
- Moreover, *Khadir* plays a role in controlling bleeding from wounds, due to its *Shita* and *Kashaya* nature.
- The *Krimighana* characteristic of *Khadir* prevent reoccurrence and restrict infections thus resist pathological progression of wound.
- Khadir* has chemical composition of Tannis, Catechin, Flavonoids & taxifolin.
- Tannins:anti-hemorrhagic, anti-inflammatory & antacid properties.
- Catechin: antioxidant & antimicrobial properties.
- Flavonoids: antidiabetic & anti-inflammatory properties.
- Taxifolim- antibacterial properties.

Dosage

Powder of bark: 2-4 g
bark decoction: 50-100 ml
heart wood :1-2g.

Role of *Khadir Kwath* in Wound Healing

1. Antimicrobial Activity

Khadir contains tannins and catechins that inhibit the growth of bacteria and fungi. This helps in preventing infection in wounds.

2. Anti-Inflammatory Effect

Inflammation is a natural response to injury but excessive inflammation can delay healing. *Khadir* helps reduce swelling, redness, and pain.

3. Astringent Property

The *Kashaya rasa* of *Khadir* causes tissue contraction, which reduces wound discharge and promotes wound closure.

4. Wound Cleansing (*Vrana Shodhana*)

Khadir Kwath is widely used for *Vrana Prakshalana*, which means washing or irrigation of wounds. This process removes debris, pus, and microorganisms.

5. Promotion of Granulation Tissue

Healthy granulation tissue is essential for wound healing. *Khadir* supports the formation of new tissue and improves the healing process.

6. Antioxidant Action

Free radicals generated during inflammation can damage tissues. The antioxidant components in *Khadir* neutralize these free radicals and protect tissues.

These properties support the traditional Ayurvedic use of *Khadir* in wound management.

DISCUSSION

- Ayurvedic* wound management emphasizes proper cleansing before healing. If a wound is not properly cleaned, healing may be delayed.
- Khadir Kwath* acts as both.
Vrana Shodhana (cleansing)
Vrana Ropana (healing)
- Its astringent nature helps reduce discharge, while its antimicrobial properties prevent infection. In obstetric wounds such as episiotomy, herbal preparations like *Khadir Kwath* may serve as a safe and cost-effective alternative to chemical antiseptics.
- Integration of traditional *Ayurvedic* medicines with modern wound care practices may improve patient outcomes.

CONCLUSION

- Acharya Charaka* designates it as the premier *Kustahara dravya* in *Agryaprakarana*, attributing properties such as *Kustagna, Switraghna, Kandugna* and *Krimihara*.
- The decoction, enriched with catechin and Catechu tannic acid, facilitates better absorption.
- The *Kashay rasa* of *Khadir* exhibits *Twakprasadak* and *Raktashodhak* properties, culminating in *Raktaprasadan* And the reduction of skin discoloration, establishing it as an exceptional immune-modulatory drug for skin Diseases.
- Traditionally, it is Employed for managing conditions such as *Medoroga, Prameha, Aruchi, Atisar, Jirnajwar* and *Kasa*.
- Khadira* Plays a vital role in preventing pathogenesis of Infections; it effectively inhibits the causative Pathological factors and restricts growth of fungi and bacteria by virtue of its *Tikta & Kshaya Rasa*, and *Ruksha Guna*.
- Khadir Kwath* is a valuable herbal preparation described in *Ayurveda* for wound management. Due to its antimicrobial, anti-inflammatory, antioxidant, and astringent properties, it effectively promotes wound healing. It can be safely used for wound cleansing and

healing, particularly in obstetric and gynecological wounds.

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