Review Article

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A REVIEW ON ANTISEPTIC AND WOUND HEALING POTENTIAL OF SCHEDULE E-1 DRUG FORMULATION IN DUSHTA VRANA

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ABSTRACT

Wound infection is endured to be strenuous problem and health care burden. Early identification along with effective intervention are significant to reduces the economical and health consequences. Thousands of bacteria live normally on every square centimetre of skin. If the skin barrier is disrupted as a result of trauma, surgery or disease, this Bacteria may cause conquer and cause a symptomatic infection. Micro-organism from the environment or from mucosal surface may also contaminate a skin wound. Infection are inconvenient and painful that may lead to failure or delay in wound healing and poor cosmetic outcomes. Wound infection intensifies the cost of care and antibiotic resistance whereas topical antiseptic agents may cause human cytotoxicity. Many formulations are described in Samhita, Bhadrashryadi taila is among one of them which consist of schedule E-1 drugs under Drug and Cosmetics Rules 1945. Topical application of Bhadrashryadi taila may help to act as Antiseptic, Antibacterial, Anti-inflammatory that can promote wound healing, reduce antibiotic resistance, healing time and cost effective.

Keywords: Dushta Vrana, Vrana, Wound, Schedule E-1 drugs formulation, Bhadrashryadi taila, Chandanaadi taila.

INTRODUCTION

The frequency of wound infection is more common than any other pathological condition. In some cases, wound infection is very grievous causing necrotizing cellulitis or fasciitis, spread into local bones, tendon or joint tissue that may lead to systemic diseases, Example shock may result in death. The incidence of wound infection ranges from 2 to 17.5% after trauma and from 1 to 1.5% after minor dermatological surgical procedure. Various studies undertaken since 1960s shows topical antiseptic agents have favourable effect on acute and chronic wound care. The acceptance of antiseptic agent was seen deplete after invitro study show that agent damages fibroblast and keratinolytic cells types in laboratory models causes human cytotoxicity[1]. Wounds are one of the most frequent types of injury and leave lasting impressions on the body. In Ayurveda, these wounds are referred to as Vrana, a term that describe the destruction of tissues (Gatravichurnnane) and the discolouration of skin due to scaring (Gatravavaivarnyakaroti)[2,3]. Once a wound heals, its scar tends to remain visible for life. There are two main categories of wounds in Ayurveda Nija Vrana and Agantuja Vrana. Nija Vrana is result from imbalances in the three dosha (Vata, Pitta, Kapha and Shonita) and Agantuja Vrana occurs due to external trauma, impacting either the skin or internal structures like muscles or tendon[4]. Each vrana is associated with specific dosha imbalances. Pain is linked to aggravated Vata, while Pitta and Kapha are involved in the processes of pus formation and suppuration[5]. The balance of these Dosha is essential to wound healing. In Ayurvedic classics there are many formulations for wound treatment. Among these, the external application of medicated oils (Taila) such as Bhadrashryadi taila is a vital treatment, the formulation consists of 5 poisonous drugs[3] are described in Upavish under vegetable origin and 2 are describe in Uparasa that are mineral origin, all of them are specified under schedule E-1 under Drugs and Cosmetics rules 1945 [6]. This taila may help reduce inflammation, prevent infection and promote healing. Ayurveda provides a holistic approach to wound care, emphasizing natural remedies and Dosha balance for optimal healing.

Drug Description

No substance in the world is devoid of medicinal properties, as every element has its own effectiveness[7]. Bhadrashryadi taila embodies this principal by being crafted from a collection of potent medicinal herbs, each offering unique healing properties. Bhadrashryadi taila is consist of the following drugs mentioned in Table 1 where as physical properties of drugs are describe in Table 2 and pharmacological activities are explain in Table 3.

Bhadrashryadi taila is a formulation described in "Astangahrdayam" uttarsthan for the treatment of Dushtavrana, Nadivrana, Kushtha, Apachi[8]. The preparation consists of total 17 drugs from which 5 are poisonous drugs Vatsanabha, Karavira, Arka describe in Upavish under poisonous plant were as Manahsila, Haratal are describe in Uparasa that are irritant metallic poisons[6], each ingredient specific action contributes to the overall potency of Bhadrashryadi taila, making it an effective remedy for wound care, skin health and other therapeutic applications. The combination of these ingredient, along with their physical properties and pharmacological effects, helps to explain versatility and effectiveness of Bhadrashryadi taila in traditional Ayurvedic treatment.

Preparation of Bhadrashryadi Taila

All ingredients are taken in equal amount except vatsanabha (one-half). Kalka is prepared by mixing all herbal ingredients. Sarshapa taila are taken 4 times from total amount of given drugs. Brahmhipatra, Ark ksir and gomay takes 4 times of sarsapa taila after that the tailapaka to be done[8].

Table 1: Contents of Bhadrashryadi taila[8]

Classical name	Botanical name	Family	Useful part	Quantity
Shweta Chandan	*Santalum album* Linn.	Santalaceae	Kaashta	1 part
Devadaru	*Cedrus deodara* Roxb.	Pinaceae	Kaashta	1 part
Marich	*Piper nigrum* Linn	Piperaceae	Phal	1 part
Haridra	*Curcuma longa* Linn.	Zingiberaceae	Kanda	1 part
Daruharidra	*Berberis aristate* DC	Berberideace	Kaashta	1 part
Nishoth	*Operculinaturpethum* Linn	Convolvulaceae	Mool	1 part
Musta	*Cyperus rotundus* Linn.	Cyperaceae	Kanda	1 part
Manashila				1 part
Hartal				1 part
Jatamansi	*Nardostachys jatamansi* DC	Valerianacea	Phal	1 part
Indravaruni	*Citrullus colocynthis* Schrad	Cucurbitaceae	Panchanga	1 part
Karavira	*Nerium indicum* Mill.	Apocynaceae	Phal	1 part
Vatsnabha	*Aconitum chasmanthum*	Ranunculaceae	Kanda	½ part
Brahmhipatra Arkkshir Gomay	*Bacopa monnieri* Linn *Calotropis procera*		Patra Fresh milk	4 times from sarsaptaila
Sarshapataila	*Brassica campestris* Linn.	Brassicaceae		4 times from total amount of kalkadravyas

Table 2: Physical properties of ingredients in Bhadrashryadi taila

Drug name	Rasa	Guna	Veerya	Vipaka	Doshaghnata
Shweta Chandan[9]	Tikta, Madhur	Laghu, Ruksha	Sheeta	Katu	Kaphapittsh amak
Devadaru[10]	Tikta	Laghu, Snigdha	Ushna	Katu	Kaphavatsh amak
Marich[11]	Katu	Laghu, Tikshna	Ushna	Katu	Kaphavatsh amak
Haridra[12]	Tikta, Katu	Laghu, Ruksha	Ushna	Katu	Kaphavatsh amak, Pittarechak
Daruharidra[13]	Tikta, Kashya	Laghu, Ruksha	Ushna	Katu	Kaphapitthar
Nishoth[14]	Tikta, Katu	Laghu, Ruksha, Tikshna	Ushna	Katu	Kaphapittsh amak
Musta[15]	Tikta, Katu, Kashaya	Laghu, Ruksha	Sheeta	Katu	Kaphapittsh amak
Manahshila[16]	Tikta, Katu	Snigdha, Guru, sar	Ushna	Katu	Kaphavatash amak
Hartal[16]	Tikta, Katu, Kashaya	Snigdha, Guru	Ushna	Katu	Kaphavatash amak
Jatamansi[17]	Tikta, Kashaya	Laghu, Snigdha	Sheeta	Katu	Tridoshhar
Indravaruni[18]	Tikta	Laghu, Ruksha, Tikshna	Ushna	Katu	Kaphapittahar
Karavira[19]	Tikta, Katu	Laghu, Ruksha, Tikshna	Ushna	Katu	Kaphavatash amak
Vatsanabha[20]	Madhur	Laghu, Ruksha, Tikshna, Vyavayi, Vikasi	Ushna	Katu	Tridoshash amak, Vatkaphash amak
Brahmhi patra[21] Ark kshir[22] Gomay[23]	Tikta Katu, Tikta	Laghu Laghu, Ruksha, Tikshna	Ushna Ushna	Katu Katu	Kaphavatashamak Kaphavatashamak
Sarshapa taila[24]	Tikta, Katu	Tikshna	Ushna	Katu	Kaphavatashamak, Pittavardhak

Table 3: Therapeutic uses and pharmacological activity of ingredients in Bhadrashryadi taila

Drug name	Karma	Therapeutic uses	Pharmacological activity
Shweta Chandan[9]	Ashrnut, Dahaprashaman, Durghandhhara, Varnya, Rakta shodhaka	Rakta vikara, Vrana vikara	Antibacterial, Antifungal, Antioxidant
Devadaru[25]	Dustavranashodhaka, Vranaropana	Rakta vikar, krmi, shoth, Prameha, Kushtha,	Anti-inflammatory, Antibacterial, Antifungal, larvicidal antiseptic
Maricha[26]	Jantughna, Krimighna, Vishaghna, Shoolaprashamana, Bhootaghna, Janthusamsthanashana	Krmirog, Tvagroga, Shula	Analgesic, Anthelmintic, Incesticidal, Anti-inflammatory
Haridra[27]	Kushtaghna, kandughna, Vishaghna, Lekhniya, Krimighna	Varnya, Krmi, Kushtha	Anti-leprotic, Anti-pruritic, Anti-poisonous, aids in reducing corpulency.
Daruharidra[28]	Kandughna, Vishahara, Shophahara, Vedanasthapana, Vranashodhana	Rakta vikar, Jvara	Anti-pruritis, Anti-inflammatory
Nishoth[29]	Shothahara, Jvaraghna,	Krmi, Kushtha, Kandu, Vrana, Shopha	Antiodematous, Antibacterial, Antihelmintic
Musta[30]	Twagdoshahara, Shothahara, Lekhan, Krimghna	Krmiroga, Charmaroga, Raktavikar	Anti-inflammatory, Antimicrobial
Manahshila[16]	Lekhana, Jantughna	Krmiroga, Kandu	Anti-inflammatory, Antimicrobial
Hartal[16]	Agnideepak, Balkara	Raktavikara, Vrana, Nadivrana	Antimicrobial, Anti-inflammatory
Jatamansi[31]	Dahaprashamana, Vranya	Shotha, Vranavikar	Antibacterial, Antifungal, Antimicrobial

Indravaruni[32]	Vranashothahara, Vranashodhana, Krimighna	Krmi, Prameha, Kushtha, Vidradhi, Vrana	Antihistaminic, Insecticidal, Antibacterial, Antimicrobial, Anti-inflammatory
Karavira[33]	Kushthghna, Vranashodha, Vranaropana, Shothahara, Raktashodhak	Krmiroga, Kandu, Kushtha, Vrana	Antifungal, antibiotic, insecticidal, Anti-inflammatory
Vatsanabha[34]	Vedanasthapana, Shothhara	Kushtha	Febrifuge
Brahmhi patra[35]	Shothahara, Vedanasthapana, Kushthaghna	Shotha, Raktavikara	Analgesic, Anticancer
Ark kshir[36]			
Gomay[23]	Vedanasthapana, Shothahara, Vranashodhan, Krimghna	Vrana, Raktavikara, Kushtha, Charmaroga	Antimicrobial, Antihelmintic, Vermicidal
Sarshapa taila[24]	Lekhana, Kushthaghna, Vranya, Jantughna,Vedanasthapana	Vrana, Tvakroga, Dushtakrmi, Kandu, Kotha	Anthelmintic, Rubefacient, Anti-fungal, Anti-bacterial

DISCUSSION

The contents of Bhadrashryadi taila is Tridoshahara especially Pitta-kapha Shamaka.
Predictable mode of action of Bhadrashryadi taila can be understood as follows.

Rasa
Tikta, Madhur, Kashaya Rasa is predominantly found in this formulation. Tikta rasa possess Dahaprashaman, Kandughna, Krimighnaand Dhatushoshan property. Kashaya rasa possesses Shoshana, Stambhana, Rakta Prashamana, Ropana effect. Madhura rasa possesses Dhatuvardhan, Dahaprashman, Sandhankar[37]. Tikta, Kashya, Madhur rasa act to decrease the level of Pitta, Kapha Dosha.

Guna
The Bhadrashryadi taila possess laghu and rukshaguna predominantly. Laghu Guna helps to reduce Kleda or discharge of wound (Kapha), it reduces the Mala and cleans the channels of Srotas. Ruksha Guna subside the Kleda part of wound and result in Stambhana, Shoshana, Rukshana. Vishada Guna helps to wash away the impurities from Dhatu. It acts as Lekhana, Shoshana and Vranaropana. Sukshma Guna dilates the vessels and improve the circulation pf blood or nutrient[38]. Taila having naturally snigdha and guru guna, it nourishes the dhatu and improve the cell regeneration.

Vipaka and Veerya
It is katu, it reduces Kapha Dosha and Sheetaveerya is an active property of medicine. It reduces bleeding and pus discharge. Pharmacological activities of Bhadrashryadi taila can be understand with the help of active component of each drug.

Shweta Chandan
Palmitate, β-sitosterol, α and β-santalol are its major active components, Palmitate is a form of vitamin A. Vitamin A stimulate the epithelial growth, Fibroblast, granulation tissue, angiogenesis, collagen synthesis. Sandalwood have anti-inflammatory, antibacterial, antifungal activities[39]. An anthocyanic pigment cyaniding -3-glucoside from *Santalum album* was shown to be antioxidant and nutritionally important. sandalwood is potent antioxidant[40].

Devadaru
Thevolatile oils obtained from the leaves of *C. deodara* by stem distillation was analysed using gas chromatography and mass spectroscopy analysis to evaluate in vitro antimicrobial activity, volatile oil and α and β-pinene shows good anti -bacterial activity[41].

Haridra
Its major active principle is Curcumin. It has been revealed to possess Anti-inflammatory, Antioxidant, Anticoagulation, Antiseptic effect. Curcumin has also been shown to shave significant wound healing properties[42].

Daruharidra
Its major active principle is Berberine, Oxyberberine. Karachine, Palmatine. etc. These are responsible for most of the pharmacological activities such as Antimicrobial, Anti-inflammatory and Antioxidant properties[43].

Karavira
The plant major active contains are plumericin, alpha-amyrin, beta-sitosterol, kaempferol, oleandrin etc. These compounds possess antimicrobial, antifungal, Anti-cancerous properties[44].

Nishoth
The plant contains Turpenthin, α and β-turpentheins, coumarin scopoletin, turpethinic acid, β-sitosterol etc. that possess anti-hemolytic, antibacterial, anti-inflammatory and antimicrobial, analgesic, anticancer, antioxidant properties[45].

Musta
The active compounds are Luteolin, apigenin-6-C-hexoside-8-C-pentoside, limonene, lactic acid etc. that possess Antioxidant, Antimicrobial activities[46].

Manahshila
It possesses quality such as snigdha, Guru, Ushna and Sara. Because of these qualities, it can subside Vata. Studies shown its sedative and anti-inflammatory effect in egg albumin induced inflammation[47].

Hartal
In different concentration it shows antimicrobial properties against both gram negative and gram-positive bacteria. It also shows anti-asthmatic effect[48].

Maricha
The major bioactive compounds are piperine, pellitorine, piperolein B, amides and phenylpropanoids etc. possess important pharmacological properties like antimicrobial, antioxidant, anticancer and antidiabetic[49].

Vatsanabha
The plant contains 3(-bikhaconine dichloroethane solvate, 3(-bikhaconine acetone salvate), aconitine, indaconitine, lycoctonine etc. possess antioxidant and antifungal activities[50].

Indravaruni
The plant contains alkaloids: choline, elaterin-2D-glucoside. Fatty acids: palmitic, stearic, oleic and other compound β-sitosterol quercetin which act as anti-inflammatory, antioxidant and antibacterial properties[51].

Jatamansi
The phytochemicals found in jatamansi actinidine, eudesmol, terpenes and β-sitosterol that act as antifungal, analgesic and antibacterial properties[52].

Brahmhipatra
The phytochemicals found in brahmhi alkaloids: brahmhine, herpestine and saponinins that act as antioxidant, anti-inflammatory and analgesic effect[53].

Arkkshir
The plant contains calotropin, calactin, B-amyrin, calotropoleanyl ester that act as antimicrobial, analgesic, antibacterial and antioxidant properties[54].

Gomay
It provides increase resistance to illness and also has antiseptic properties. It possesses complex degrading substance and may possess antibacterial properties as per FAO (Food and Agriculture Organization of United Nations). It has been studies that Gomay is effective as penicillin and streptomycin[23].

Sarshapataila
Sarshapa possess components like sesamin have been shown to reduce inflammation and sesamol, tocopherols which help to neutralize free radicals and protect cell from oxidative damage[24].

CONCLUSION

Wound are inevitable occurrences, and classical texts offer various therapeutic approaches for their management. Bhadrashryadi taila is regarded as an excellent remedy for wound healing. Most of its ingredients possess Tridoshahara properties, particularly targeting Kapha and Pitta imbalances. This formulation effectively disrupts the pathogenesis of wounds. Pain is attributed to aggravated Vata, while suppuration involves Pitta and pus formation arises from aggravated Kapha. Therefore, during suppuration, all three Dosha are involved. Bhadrashryadi taila has a unique ability to balance these Dosha, promoting healthy wound perfusion, preventing suppuration and cleansing the wound. Additionally, the ingredients of Bhadrashryadi taila exhibit antioxidant, anti-inflammatory antibacterial, analgesic and anti-ulcer properties, which accelerate the healing process. Further dermal toxicity is essential to determine the need for longer term studies or to establish safety criteria for human exposure.

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