

# Role of honey (*Madhu*) in the management of wounds (*Dushta Vrana*)

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## ABSTRACT

Application of *Madhu* (honey) is one among the *Shashthi Upakrama* (sixty treatment modalities) described by Sushruta. Clinical observation has shown its effectiveness in treatment of *Dushta Vrana* (chronic wounds). We report a case of *Dushta Vrana* on the anterior aspect of the right leg that was treated successfully with local application of *Madhu* and *Neem* (*Azadirachata indica*) bark decoction.

**Key words:** *Dushta Vrana*, *Madhu*, *Neem bark*, *Shashthi Upakrama*

## INTRODUCTION

In spite of the advances that have been made, the management of chronic wounds is still a challenge for the clinician. Sushruta was quite aware of the importance of wound management and has described *Shashthi Upakramas* (sixty measures) for *Vrana Ropana* (wound healing), of which the application of *Madhu* is one.<sup>[1]</sup> Many research studies have been carried out to examine the value of topical application of honey for wound healing.<sup>[2-5]</sup> *Madhu* is commonly used as *Anupana* (i.e., given along with active medication to enhance activity) and also, sometimes, for its primary medical property systemically as well as locally, either alone or in combination with other drugs. It has been described to have properties like *Lekhana* (scraping), *Sandhana* (union), *Shodhana* (purification), *Ropana* (healing), and *Tridoshaghna* (pacifying all three *Doshas: Vata, Pitta, and Kapha*).<sup>[6]</sup> It is used as an external application in

*Vrana* (wound), either alone or in combination with *Sarpi* (*Goghrita*, i.e., ghee made from cow's milk).<sup>[7,8]</sup>

Honey is hygroscopic in nature, with a pH of 3.2–4.5.<sup>[9-11]</sup> It prevents colonization and bacterial growth in tissues due to this acidic nature. Most microorganisms do not grow in pure honey because of its low water activity ( $a_w$ ) of 0.6.<sup>[12-13]</sup> Honey also has antibacterial properties<sup>[14-18]</sup> The presence of hydrogen peroxide<sup>[19,20]</sup> and a high osmotic pressure<sup>[21]</sup> also contribute to the antibacterial effect of honey. These natural properties of *Madhu* are said to make it suitable for use in wound management. We present a case where a chronic wound healed after the application of honey.

## CASE REPORT

A 70-year-old female patient of *Vata-Kaphaja Prakriti* presented to us for treatment of a chronic infected wound that involved entire anterior tibial aspect of the right lower limb. She complained of burning pain in the wound as a result of a drug reaction, foul-smelling pus discharge, difficulty in walking, and occasional fever. On examination a large (22 × 4.5 cm) ugly-looking ulcer was present on the anterior aspect of the right leg, extending from the knee to the ankle joint. There was foul-smelling pus discharge and local swelling [Figure 1]. The pus culture report showed presence of *Staphylococcus aureus*. The patient had no systemic disease. She had been taking treatment for the wound without any relief. She had history of hypersensitivity reactions to ibuprofen and cotrimoxazole. All laboratory investigations were in the normal range. She was admitted in the female *Shalya* ward for further investigations and management.

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**Figure 1:** *Dushta Vrana* on the anterior aspect of the right leg before treatment at the first consultation on 19-09-2009. The characteristics of *Dushta Vrana* are *Ativivrita* (broad base), *Bhairav* (ugly look), *Putipuyamansa* (pus discharge), *Gandha* (foul smell), *Vedana* (pain), *Dirghakalanubandhi* (chronicity).<sup>[38]</sup>

Every morning the wound was first treated with freshly prepared lukewarm *Neem* bark decoction, which was poured on the wound while it was simultaneously cleaned with sterile swabs. After cleaning, *Madhu* (Dabur India Ltd., Solan, H.P., India) was applied in adequate quantity with the help of a spatula and the wound was covered with sterile gauze and loosely bandaged.

Along with the local wound treatment, the following drugs were given orally in powdered form 12 hourly: *Yashtimadhu* (*Glycyrrhiza glabra* Linn.) 2 g, *Shatavari* (*Asparagus racemosus* Willd.) 2 g, *Gokshura* (*Tribulus terrestris*) 2 g, and *Guduchi* [*Tinisporea cardifolia* Willd (Miers)] 2 g. The drugs were administered along with lukewarm water. At the end of the 5<sup>th</sup> week (the 35<sup>th</sup> day) the wound had healed completely, leaving only a minimal scar [Figure 2].

## DISCUSSION

*Madhu* has *Vranaropak* properties as per the principles of the sixty *Upakramas* of *Vrana* management described in the *Sushruta Samhita*. *Madhu*<sup>[22]</sup> is believed to act by ‘pacifying’ the three vitiated *Doshas*, i.e., *Vata*, *Pitta*, and *Kapha* by multiple actions attributable to its *Madhura* (sweet) *Rasa*, *Kashaya* (astringent) *Uparasa*, *Ruksha* (dry) *Guna*, *Sheeta* (cold) *Virya*, *Madhura Vipaka*, and *Sukshma Marga Anusari* (ability to permeate in microchannels) *Prabhava*. *Madhura Rasa* gives nutrition to the tissue, which helps in granulation tissue formation, while *Kashaya Rasa* provides *Lekhana* (scraping) that helps in desloughing, preparing the wound for healing. Thus, *Madhu* has excellent properties to heal the wound by virtue of its *Sodhana* (purification), *Ropana* (healing), and *Sandhana* (union) actions.



**Figure 2:** Healed scar on the anterior aspect of the right leg after treatment (on 23-10-2009).

At the time of presentation, the patient had pain, discharge, discoloration, etc., with predominating *Vata Dosha*. The *Madhura Rasa* of the honey reduced the vitiated *Vata Dosha*, leading to reduced pain and enhanced healing. *Madhu* has been described as having the ability to promote phagocytosis, detoxification, and proteolyses, all of which assist in cleaning the wound.<sup>[23,24]</sup> Further, *Madhu* pacifies *Pitta Dosha* by virtue of its *Madhura Rasa* and *Sheeta Guna*.<sup>[25,26]</sup> *Kapha* is taken care of with *Kashaya Rasa* and *Ruksha Guna*, which accelerate healing. Daily dressing of the wound with *Neem* bark decoction helped to inhibit the growth of microorganisms.<sup>[27-30]</sup>

Honey is a hyperosmolar medium, preventing bacterial growth. Because of its high viscosity it forms a physical barrier, and the presence of the enzyme catalase gives honey antioxidant properties.<sup>[31]</sup> Honey has been shown to be useful in the prevention of hypertrophic scarring and post-burn contractures.<sup>[32]</sup> Honey is a very effective agent for dressing of split-thickness skin graft.<sup>[33]</sup> In our patient, healing occurred with minimal scar formation. The drugs that were administered internally in powdered form (*Yashtimadhu*, *Shatavari*, *Gokshura*, and *Guduchi*) have antioxidant, immunomodulating, and adaptogenic properties.<sup>[34,35]</sup> These compounds exerts a *Rasayana* effect. As the patient was elderly, we gave *Rasayana* drugs to improve *Rasa*, *Rakta*, and *Mamsa Dhatus* (tissues). This might have contributed to the wound healing<sup>[36,37]</sup> and helped the patient to attain and maintain good health.

There were no adverse events throughout the management and healing occurred uneventfully. The mode of treatment was found to be cost-effective, safe, and easy to implement.

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