

**Case Report**

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# Successful Treatment of Ulcers with Honey-Based Topical Preparation: Five Case Reports

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**Background and objectives:** Ulcers are a global public health problem in the world, and expensive wound dressings are not universally available. Most wound patients suffer injuries that can be treated conservatively. However, the ideal dressing for the wound has not been identified. The aim of the study was to evaluate the changes in physical and morphological properties due to topical application of honey ointment on diabetic foot ulcers or cutaneous wounds. **Methods:** Honey ointment contained 40% honey in the lanoline base. Five patients of either sex were selected. Site of the wound, shape, size, and margin were recorded on day 0 and observed during weeks 2-3, and also to the end of healing to record the progression of granulation, scar type, shape, size, and clinical symptoms. **Results:** There was significant improvement in the healing process as formulation possesses antibacterial, wound cleansing, and wound healing properties. All patients showed significant improvement after 2-3 weeks with honey ointment. **Conclusion:** a combination of honey and lanolin may be effective in the treatment of low to moderate wounds.

**Keywords:** Honey; Lanoline; Wound Healing; Phenolic Compounds; Skin Moisturizer**Introduction**

Wounds are the most common injuries seen throughout the world [1]. Some ulcers are not severe and can be handled outside the hospital to reduce both the cost and hospitalization time [2]. Previous studies have shown that using natural medicine is effective in healing wounds. These medicines are gaining popularity because of their widespread availability, showing fewer or no adverse effects, moderate efficacy, and low cost as compared with synthetic drugs [3]. The most common and traditional ingredient used for a skin ulcer is honey. The carbohydrate in honey and several phenolic compounds such as p-hydroxybenzoic acid, naringenin, pinocembrin, and chrysin are antimicrobials and antioxidants [4]. Another potential wound dressing ingredient is lanoline which has been used for a while as a skin moisturizer. The rationale behind using lanoline in the mixture is derived from the observation that it has emollient properties. Honey and lanoline are natural ingredients, comprising antioxidant, antibacterial, and antifungal compounds [5-7]. The current study set to objectively investigate the effectiveness of a semisolid formulation of honey in lanoline base to treat wounds.

**Materials and Methods**

Before-and-after design of study was conducted at the Skin Diseases & Leprosy, Research & Training Center of Tehran University of Medical Sciences from June to September 2017 to find out the effect of honey ointment on poor healing wounds. The patients provided informed consent to have their photographs published. All clinical cases are described in (Table 1). Before application of honey ointment on the wound on the first day, the wound was cleaned with normal saline; honey ointment was applied directly or on sterile cotton gauze, and the wound was dressed daily in the morning and evening.

**Results and Discussion**

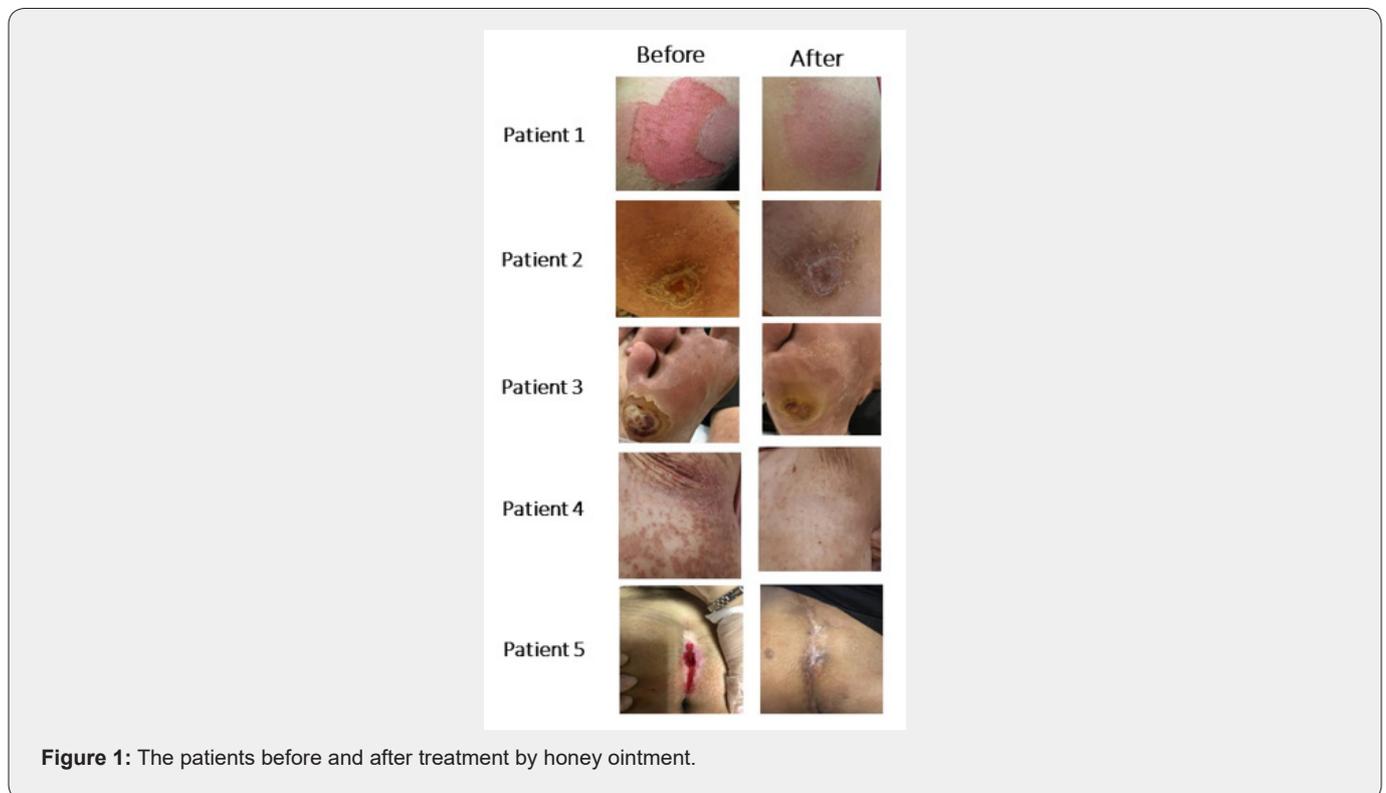
The definitive observational evaluation (Figure 1 & Table 1) confirmed that the wounds had been completely repaired. Wounds not only damage the cutaneous tissue locally, but also cause some systemic effects, such as loss of fluid and protein, sepsis, changes in the metabolic state, and involvement of the hematological and immune systems [8]. Despite the enormous evolution in

science and technology, it is still difficult to improve the healing progression in a challenge to limit the length of hospitalization and suffering. The use of natural products such as honey to treat wounds has great appeal for people, especially, in underdeveloped countries [2]. There are a lot of evidence to support the benefits of honey dressing in reducing swelling and redness associated with wounds. The findings revealed that ointment (containing 40% honey) for diabetic wounds healed all patients. The outcome was indicative of successful wound healing during weeks 2-3 and controlled infection. Honey reduces the pain, edema, and has an antibacterial property due to its acidity, osmolality, hydrogen

peroxide content, and stimulation of immunity [3]. Honey exerts direct nutrient effect on regeneration of tissue because it contains a wide range of amino acids, vitamins, and trace elements in addition to large quantities of readily assailable sugars. It promotes rapid healing as it stimulates tissue regeneration, angiogenesis, and fibroblast growth. Anti-inflammatory action of honey soothes healing by reducing pain and swelling. Further studies have shown that honey contains inhibin, an enzyme from bee pharyngeal glands, which breaks down to hydrogen peroxide and glucoactone/gluconic acid; these act as a mild disinfectant and mild antibiotic, respectively.

**Table 1:** Description of five clinical cases.

Case	Age/sex	Disorder	Application	Duration	Result
Patient 1	12/male	chemical burning	wound was washed with normal saline, and then covered with sterile gauze dressing twice a day	7 days	Controlled infection and edema, reduce the size of wound
Patient 2	50/male	diabetic foot ulcer	wound was washed with normal saline, and then covered with sterile gauze dressing three times a day	10 days	reduced the swelling and infection associated with wound, soothed healing
Patient 3	40/male	diabetic foot ulcer	wound was washed with normal saline, and then covered with sterile gauze dressing 3 times a day	14 days	Partial clinical resolution of the foot ulcer and infection disappeared
Patient 4	32/female	burn caused by hot water steam	wound was washed with normal saline, and then covered with sterile gauze dressing twice a day	3 days	Improve healing process and reducing pain and inflammation.
Patient 5	25/male	malodorous and deterioration wound on his buttock	wound was washed with normal saline, and then covered with sterile gauze dressing three times a day	21 days	Significant improvement was noted and the wound was almost healed.



**Figure 1:** The patients before and after treatment by honey ointment.

This  $H_2O_2$  which is released at sufficient levels is effective against bacteria but does not cause tissue damaging, and fibroblast growth is stimulated by  $H_2O_2$  [9]. Acidic nature of honey releases oxygen as new growing cells need oxygen and stimulates the white blood cells. Honey has been used to heal wounds in many conditions. Two open-label trials also established significant wound healing with honey [10]. In another study, wound infections were cured with topical application of honey twice daily [6]. Two systematic reviews concluded that honey is valuable in the treatment of wounds [11,12]. Shukrimi Q et al. showed the efficacy of honey dressing in reducing swelling and redness accompanied by less pain [13]. Hydration balance (moisture absorption and evaporation) is another important factor in wound healing. Wounds in moist conditions recover faster with less serious scar formation. Chvapil et al. revealed significant enhancement of the epithelization rate and the thickness of the dermis with respect to the effect of lanolin base alone [14]. The outcomes of the present study suggest that the combination of honey and lanolin may be effective in the treatment of low to moderate wounds associated with first and second-degree burns, diabetic foot ulcer, and topical irritations. This combination can be used in poor communities as it is inexpensive and affordable for their people.

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