

Efficacy of Apitherapy for Skin Regeneration

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Abstract

In daily routine, skin may be exposed to diverse severity showing wounds and burns which heal at different rate. This variation in dermal recovery and regeneration rate indirectly indicates the physiological factors which function to reestablish internal normal state of the body. To speed up the process of skin healing, several cost effective local produce based boosters are utilized for treatment of dermal burns and injuries. In this regard, honey bee products are preferred as alternative than side effects inducing anthropogenic medicines. Apitherapy (bee therapy) is the broad-spectrum pharmaceutical appliance of honey, propolis, bee pollen, royal jelly, bee wax, bee venom and bee bread which are commonly obtained products from honey bees and are considered as ideal skin healers due to their suitable biochemical composition, antimicrobial, anti-inflammatory and other supportive qualities. Thus, further research efforts are required for better apiculture techniques and dose optimization of these bee products to replace many hazardous antibiotics and other synthetic drugs.

Keywords: Dermal recovery; apitherapy; bee products, antimicrobial; anti-inflammatory; skin healers.

1. Introduction

Skin is the largest connective tissue which is protective in nature. It not only serves as sensory and physical barrier from external hazards but also regulates the internal homeostatic fluctuations. Sometimes, it is exposed to various either major or minor wounds and burns etc. and rate of skin recovery and regeneration indirectly ensures the reestablishment of internal normal state of the body. For this purpose, low cost local produce like flora and honey bee products should be preferred over hazardous anthropogenic drugs to alternative prepare stimulatory medicines for improved dermal injuries recovery rate along with least side effects [1-3].

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Wound healing is a subject of research and investigation since long time because it is a complex series of dynamic anatomical, morphological and physiological changes and globally various polyherbal remedies have been introduced yet which not only boost immunological response but also accelerates healing pace [4-5, 46]. Moreover, recent data highlights that different honey bee-based products contain cytokines and growth factors which are essential for tissue repair and sometimes they exhibit antimicrobial, antioxidant, anti-inflammatory and moisturizing potential [6,7]. Apitherapy is currently influencing even the domains of tissue engineering and dermal regeneration [8, 41].

2. Types of wounds

Wounds are usually categorized on the basis of their cause and physiology (Fig.1).

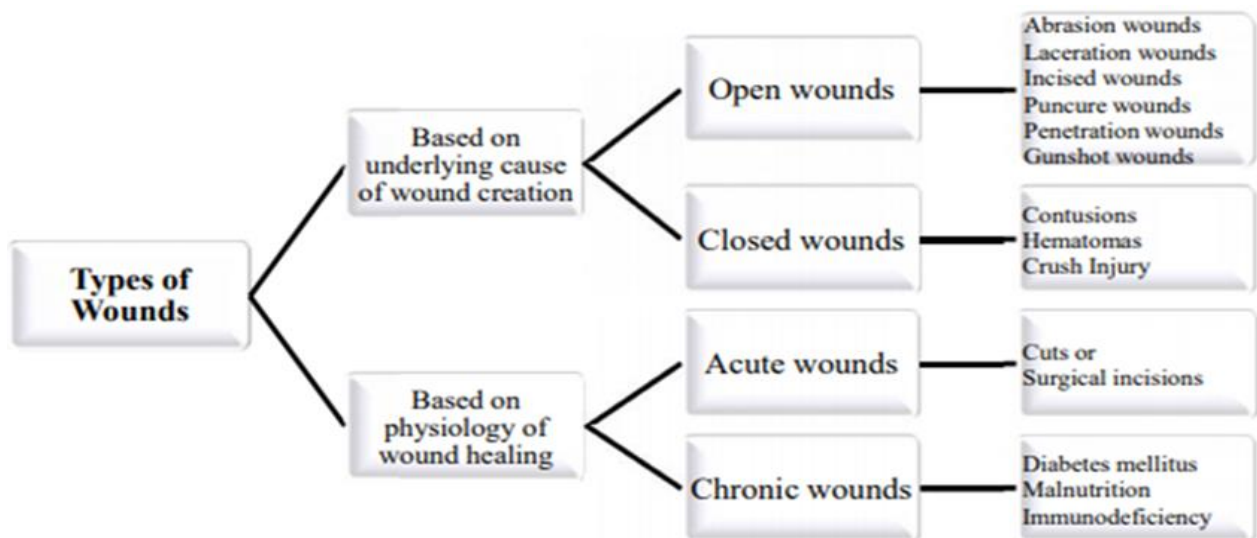


Figure 1: Types of wounds [9-10]

3. Factors affecting the wounds and burns healing

Influential factors which impair wound and burns recovery and regeneration [11, 42] are as follows:

- Improper diet
- Infection at wounded site
- Hypoxic state and tissue perfusion of injured area
- Intake of drugs
- Aging
- Diabetes and other health disorders [12]
- Improper wound management [13]

4. Apitherapy: a potent remedy for dermal injuries

Apitherapy or Bee therapy (from the Latin word '*Apis*' which means bee) is the broad-spectrum pharmaceutical

appliance of honey bees’ produce [14-17] and their contribution for dermal healing is tabulated as under (Table.1):

Table 1: Honey bee products for dermal apitherapy

| Bee Product | Role in dermal recovery | Reference(s) |
|--------------------|--|-----------------------|
| Honey | This viscous substance derived from nectar and modified by honey-bees. It has wound-healing and antibiotic properties thus serve as an inexpensive option for moist wound-dressings. That’s why; since ancient times, it is employed in cure of dermal burns and wounds. Biochemically, it contains phenolic acid and flavonoids and exhibits antibacterial and anti-oxidant properties. Moreover, it also has some religious significance as stated in the Holy Quran: “thy Lord taught the bee to build its cells in hills, on trees and in men’s habitations...there issues from within their bodies a drink of varying colors, wherein is healing for mankind”. | [17-20] |
| Propolis | It not only protector of the bee hives from infection but also utilized by humans as immune system booster. Biochemically, it resembles to aspirin so performs same functions without any side effects. It also heals sore throats, diverse wounds like burnt, diabetic, excisional and incisional. Whereas it induces synergistic effect, when used in combination with honey, thus results in rapid tissue repair. | [17, 21-27] |
| Bee pollen | For skin healing and regeneration, bee pollen shows antifungal, antimicrobial, antiviral, anti-inflammatory, immunostimulant properties and also serves as local low-cost analgesic and promotes proliferation of endothelial and mesenchymal cells and deposition of collagen matrix in granulation tissue of the burn wounds in humans. Pollens are collected by bees from flowers. Benefits of bee pollen extracts include detection and immunization against allergies. They are considered as components of the apitherapy drugs as they are reducers of weakness, premature aging, constipation and weight loss. Flavonoids and phenolic acids are important constituents of the bee pollen based ointment and play significant roles in anti-inflammatory and antibacterial activities on post burn wounds. | [17,23,26,28, 29, 43] |
| Royal jelly | Improves skin health and shows anti-wrinkle, antibiotic, anti-inflammatory, anti-allergenic, tonic and anti-aging behavior. | [17, 30, 45] |
| Bees wax | It is potent for not only wound healing but also reduces its duration by improving the number of fibroblasts and angiogenesis. That’s why; beeswax is used for production of cosmetics and ointments. | [17,31,32] |
| Bee venom | Bee venom is a natural toxin of honeybee and recognized as a traditional medicine for chronic inflammation and dermal ailments e.g., diabetic wounds recovery. Because it has therapeutic potentials like antimicrobial, anti-inflammatory, antioxidant, and antitumor nature. It is also employed as cosmetic component. | [17,33-38] |
| Bee bread | Bee bread is a fermented product of a mixture of pollen, nectar and bee saliva. It exhibits antimicrobial, antioxidant; antiradical, anticancer, and anti-inflammatory activities are employed for pharmaceutical pursuits like dermal skin regeneration and healing. | [17,39,40,43, 44] |

5. Conclusion

The major aim of this study was to highlight the effectiveness and biochemical significance of economical and local products of honey-bee which are utilized as good alternative skin healers to replace different synthetic drugs and antibiotics. To enhance the effectiveness and to obtain improved skin wounds and burns recovery rate

of this bee therapy (apitherapy) future research work should be focused on better apiculture techniques and on dose optimization of these bee products.

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