



Contents lists available at ScienceDirect

Asian Pacific Journal of Tropical Biomedicine

journal homepage: www.elsevier.com/locate/apjtb

Document heading

The healing potential of honey and propolis lotion on septic wounds

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ARTICLE INFO

Article history:

Received 18 July 2011
 Received in revised form 7 August 2011
 Accepted 25 August 2011
 Available online 10 September 2011

Keywords:

Healing potential
 Honey
 Propolis
 Lotion
 Treatment
 Septic wounds

ABSTRACT

Objective: To assess the potential of lotion made from honey and propolis in the treatment of septic wounds in order to determine its effectiveness. **Methods:** The study area was Osun State, Southwest Nigeria. Fifty patients with septic wounds, aged from 20–60 years, were treated with lotion made from honey and propolis harvested from the Centre for Apicultural Research, Training and Honey Production (CARTHOP) Farm of College of Agriculture, Osun State University, Ejigbo. Honey and powdered propolis were mixed in a ratio of seven to three. The lotion was applied to the wounds three times a day. **Results:** The wounds of the 80% of the patients showed remarkable signs of improvement at the end of the 4th day; 60% had their wounds completely healed at the end of the 10th day; the remaining 40% healed completely at the end of the 15th day. All healed wounds were without scars or blisters. **Conclusions:** It can be concluded that the lotion from the honey and propolis has great potential for the treatment and healing of septic wounds. It is recommended that it should be incorporated in the treatment plans of septic wounds and other gangrenous wounds by hospitals in Nigeria.

1. Introduction

Honey is a mixture of sugars prepared by honeybees from the natural sugar solutions called nectar obtained from flowers or other plant secretions^[1]. Honey has a long history^[2] and has been used from ancient times as medicine^[3,4]. In addition to its use as food, honey has been used in medicine as dressing for wounds and inflammations, both internal and external^[2]. Many of the traditional uses of honey have continued until today^[5]. The application of honey in medicine has recently been rediscovered and is gaining acceptance as an antibacterial agent for the treatment of ulcers, wounds, and other surface infections. Honey has also been shown to be effective in rapidly cleaning infection and promoting healing. Reports indicated that honey has been successfully used on infections not responding to standard antiseptic and antibiotic therapy and as a method of accelerating wound healing^[2,6,7]. Recent interest in medicinal use of honey has led to legitimate scientific investigations^[2]. Clinical observations suggest that honey holds significant promise as an effective treatment for a number of medical conditions and particularly in the management of non-healing wounds^[8]. Unprocessed,

undiluted honey has been used in clinical studies and the response has been good^[1]. Also, in economically deprived areas, where people cannot afford the modern drugs and dressings, honey which is cheaply available and easy to use, can still play an important role^[9].

Propolis is a resinous substance collected from trees by the bee *Apis mellifera*, which uses it as a building and insulating material in the hive. Bees use propolis (bee glue) not only as a building material but also to keep low concentration of bacteria and fungi in the hive. Although its chemical composition varies, propolis constituents generally include about 10% essential oils, 5% pollen, and 15% various organic polyphenolic compounds including flavonoids and phenolic acids^[10]. Propolis is the bee product with the highest antimicrobial activity^[11]. The antibacterial activity of propolis has been confirmed by numerous scientific studies. Antibacterial activity has been demonstrated against both gram positive and gram-negative, both aerobic and anaerobic types. Although the composition of propolis differs considerably depending on its botanical origin, all examined types of propolis revealed a strong antibacterial activity^[12,13].

Many references have been made to the medicinal properties of honey and propolis (another beekeeping product). Considerable studies have highlighted the antibacterial activities of honey^[1,5,14,15], antifungal effects^[14,16], anticancer effects^[14], wound healing and tissue repair characteristics^[4,14,17–19], and anti-inflammatory

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activity[7]. Topical applications can accelerate wound healing in humans[7]. The simultaneous stimulation of tissue regeneration by honey reduces scarring and healing times[7]; and dressings applied with honey do not stick to the wounds or delicate new skins. Report indicated that honey inhibited fungi and bacteria infections[16]. Various studies also show that honey is an ideal topical wound dressing agent in surgical infections, burns and wound infections. Honey is an effective treatment of wounds because it is non-irritant, non-toxic, self-sterile, bactericidal, nutritive, easily applied and more comfortable than other dressings[1].

2. Materials and methods

The study was designed in the College of Agriculture, Osun State University, Ejigbo, and was tested in some hospitals in Osogbo, Osun State. Honey and propolis were collected from the Centre of Apicultural Research, Training and Honey Production (CARTHOP) Farm. They were processed at CARTHOP Laboratory to remove impurities through sieving. Propolis which was extracted and dried was grinded into powdery form before it was mixed with honey. Honey lotion was mixed with powdered propolis in the ratio of seven

to three. The lotion was then stored in a clean and sealed bottle. Fifteen hospitals were contacted for possible trials of the lotion produced but only five participated. Ten patients with septic wounds were selected for the study in each of the five hospitals. The data obtained were presented in the form of table, frequencies, percentages, and charts.

3. Results

The summary of the results was presented in Table 1 and Figure 1. The result indicated that 36% and 44% of the septic wounds in all the five hospitals combined had made remarkable improvement at the end of the 3rd and 4th day, respectively. Furthermore, 4%, 8%, 24% and 24% of the wounds had healed completely on the 7th, 8th, 9th and 10th day, respectively. In addition, 8%, 8%, 10% and 14% were completely healed on the 12th, 13th, 14th and 15th day, respectively. Thus, 80% of the wounds showed remarkable improvement within the 1st and 4th day. 60% had the wounds completely healed within the 5th and 10th day while the remaining 40% were completely healed within 11th and 15th day.

Table 1
Effectiveness of honey and propolis lotion in the treatment of septic wounds.

Hospital/Day	No. of patients	Improvement								Healing						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hospital 1	10	–	–	3	5			1	–	3	2		1	2	–	1
Hospital 2	10	–	–	2	6			–	1	1	4		1	1	2	–
Hospital 3	10	–	–	4	4			–	–	2	4		1	–	1	2
Hospital 4	10	–	–	5	3			–	2	3	1		–	–	2	2
Hospital 5	10	–	–	4	4			1	1	3	1		1	1	–	2
Total	50 (100)	–	–	18 (36)	22 (44)			2 (4)	4 (8)	12 (24)	12 (24)		4 (8)	4 (8)	5 (10)	7 (14)

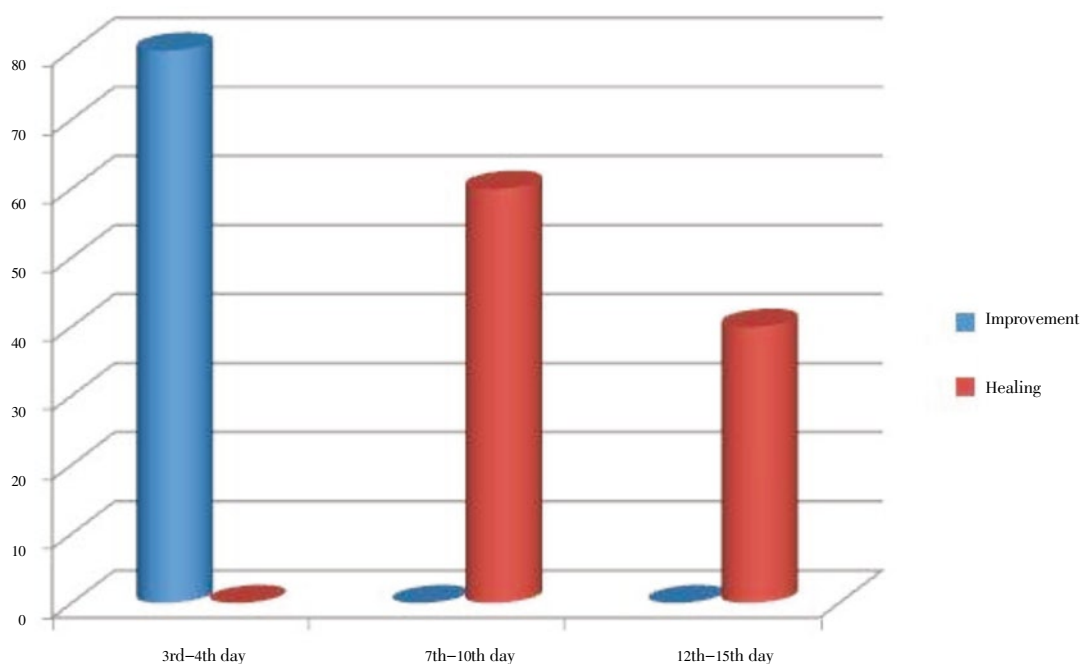


Figure 1. Percentage wound conditions during the course of the study.

4. Discussion

Previous studies also confirmed the efficacy of honey in wounding healing. In the observational studies of topical application of honey, it was observed that wound was improved with honey, with healing occurring within 2 weeks^[20] while there was improvement in more than 90% of the wounds, with healing occurring within 9 weeks^[21]. Similarly, in controlled clinical trials of topical application of honey in wound healing, it was observed that healing with honey was in 40.3 days and 16.6 days, respectively^[22,23]. In addition, previous studies showed that efficacy of honey was 4 times superior to the control group^[24], while it was observed that 56.6% healed with honey in 12 weeks^[25]. Cleaning and regenerative actions of honey and propolis on wounds from pig bite have also been reported^[26]. The present study appears to confirm the commonly held belief that honey and propolis may have many antibiotic, bactericidal properties and therefore have many applications in the treatments of wounds.

Topical application of products from apiculture (beekeeping), particularly honey and propolis has greater potential in the treatment of septic wounds. Their incorporation in the treatment plans for septic wounds and other gangrenous wounds is highly desirable particularly in the rural areas where few orthodox hospitals exist in view of their potential for wound healing.

Conflict of interest statement

We declare that we have no conflict of interest.

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