



Clinical study

Treatment of non-healing leg ulcers with honeydew honey



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KEYWORDS

Honey;
Wound;
Treatment

Abstract *Background:* Honey is used as a traditional medicine for centuries by different cultures for the treatment of various disorders. However, not all honeys exhibit equal antimicrobial potency and only a few meet the criteria for clinical usage. *Aim:* The aim of the study was to determine clinical efficacy of sterilised honeydew honey in the treatment of the lower leg ulcers in 25 patients. Furthermore, we evaluated honey acceptability of patients in terms of pain and overall satisfaction. *Methodology:* A total of 25 patients with chronic venous leg ulcers were recruited into this study. The 100% γ -irradiated sterile honeydew honey was applied onto the cleaned wounds and each wound was assessed at the least two times in for a period of 6 weeks. *Results:* During the course of treatment, the average wound area of all patients decreased significantly from 51 (3–150) to 22 (0–91) cm². Eighteen patients (72%) experienced a decrease in reported pain levels while five patients (20%) experienced the same level of pain throughout the study. The overall satisfaction with honey treatment was positive in 80% of patients. Only two patients experienced poor tolerance due to problems at ulcer site related to pain. *Conclusion:* Based on these findings, honeydew honey has the potential to be one of the medical-grade honeys.

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Introduction

Hard-to-heal leg ulcers, or ulcers of a duration longer than 4-weeks and those, which fail to respond to standard care, are the major cause of morbidity in elderly population. Venous or stasis ulcers account for 80%–85% of all leg ulcers [1]. The standard treatment of venous ulcers is the compression of the lower leg by tight bandaging [2] but other treatment options have been proposed including honey therapy.

Honey has been used as a traditional medicine for centuries by different cultures for the treatment of various disorders. It offers broad-spectrum antimicrobial properties and promotes rapid wound healing [3].

The antibacterial potential of honey has been considered the exclusive criterion for its wound healing properties. Therefore, antibacterial activity of honey from different floral sources has been intensively studied over the past few decades. Manuka honey, a type of medical-grade honey is the most frequently studied in human clinical trials and claimed to have therapeutic advantages over other honeys. However, some concerns regarding the toxicity of methylglyoxal, and, major antibacterial compound of manuka honey, have been recently expressed [4].

Slovak fir honeydew honey has recently showed excellent antibacterial activity against multi-drug resistant clinical isolates of *Stenotrophomonas maltophilia* [5] and wound pathogens [6]. It possesses anti-biofilm [6] and anti-MMP-9-activity [7] *in vitro*. In addition, it has been successfully applied in the treatment of infected gluteo-femoral fistulas [8] and as prophylactic agent of endophthalmitis [9].

In this study, we characterised a clinical efficacy of sterilised honeydew honey in the treatment of the lower leg ulcers in 25 patients. Furthermore, we evaluated honey acceptability to patients in terms of pain and overall patient satisfaction.

Patients and methodology

A total of 25 patients were recruited for this study. The study protocol was approved by University Hospital ethical committee, and informed consent was obtained from all participants. All patients had chronic venous leg ulcers for more than 12-weeks' duration at the time of presentation, and an ulcer area range of 3–150 cm². Venous leg ulcers were selected after clinical examination. The baseline demographics of the recruited patients are presented in Table 1. Before the treatment,

Table 1 Patient characteristics.

Age (years)	Mean	79
	Range	59–93
Gender	Male	12
	Female	13
Ulcer aetiology	Arterial-Venous	19 (76%)
	Mixed	6 (24%)
Ulcer size (cm ²)	Mean	51
	Range	3–150

ulcers were cleaned with cleansing agents or de-sloughing materials.

The 100% γ -irradiated sterile honeydew honey was applied onto the cleaned wounds using sterile spatula, covered by a non-adhering dressing and changed after 1–3-days depending on a wound exudation. Each wound was assessed at the least three times for a period of 3–6 weeks. Primary outcomes such as change in ulcer area, rate of epithelisation and adverse effects were determined. In addition, all patients were asked to record their subjective feelings (for example, pain level) and overall satisfaction during the honey treatment. Level of pain experienced was assessed as follows: 0 = pain decreased; 1 = pain remained the same; 2 = pain increased. Patients rated the overall satisfaction with the honey treatment on a numerical scale 1–3 (1 = poor, 2 = average, 3 = good).

Results

From the twenty-five patients with venous insufficiency or mixed leg ulcers recruited two patients did not complete the study due to problems at ulcer site related to pain. Eighteen patients (72%) experienced a decrease in reported pain levels while five patients (20%) experienced the same level of pain throughout the study (Fig. 1).

During the course of treatment, the average wound area of all patients decreased significantly from 51 (3–150) to 22 (0–91) cm². Honey-induced process of wound healing was also photo-documented in some cases (Fig. 2).

Overall tolerance of honey was good after 6 weeks of treatment. In 80% of all assessments, the results were positive; in 12%, there was no change in tolerance; and in 8% there were complaints of poor tolerance (patients dropped out of the study) (Fig. 3).

Discussion

In this study, Slovak honeydew honey improved leg ulcer healing within 6 weeks. All patients who

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