Use of Manuka Honey to Improve Healing after Third Molars Surgery: An Innovational Study

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ABSTRACT

Abstract: This study was done to assess the efficacy of manuka honey (a plant extract) in improving healing after third molar surgery.

Method: A total of 20 patients with impacted mandibular third molar were included in this study. The level of discomfort, facial swelling, mouth opening, VAS scale for pain, presence or absence of alveolar osteitis was assessed in this study.

Result: This study concludes that, manuka honey has a promising result in healing after third molar surgery because of its antibacterial property.
INTRODUCTION:
The conventional honey has been used as medicinal remedy since long period of time. Honey has been used in treating burns, infected wounds, open wounds etc. There is ample literature suggesting the use of honey in extraction socket in improving healing. Honey has been used to treat infected wounds since last 2000 year, even before bacteria was discovered as an infectious agent. Honey has an inhibitory action on about 60 species of bacteria including aerobic and anaerobic, gram positive and gram negative microorganisms. The ph of honey is acidic, ranging 3.2-4.2, which is low enough to inhibit the growth of many pathogens. The major antibacterial activity is due to the presence of the hydrogen peroxide, as a result of an enzymatic reaction in honey. All antibacterial property doesn’t account for the peroxide generating system. Several chemical with antibacterial activity have been identified in honey such as Pinocembrin, Terpes, 3,45 trimethoxy benzoic acid, 2 hydroxyl, 3 phenyl propionic acid, 2 hydroxybenzoic acid and 1,4 dihydroxybenzene. It appears that honey from certain plants like Manuka honey has better antibacterial properties than the other honey. Manuka honey is extracted from the Manuka tree (Leptospermum Scorperium) which is found in New Zealand. It is known for its antibacterial property. Manuka honey acts against harmful bacteria such as staphylococcus aureus and helicobacter pylori, which makes it a useful tool for the treatment of wounds and ulcers. In conventional honey, hydrogen peroxide by the endogenous enzyme glucoseoxidase is responsible for anti-microbial property. Where as in Manuka honey, other factors are responsible for its properties. Several other “non-peroxide” factors were discussed to be responsible for the unique antibacterial activity of Manuka honey, but the chemistry behind this phenomenon remained unclear for decades (Russel et al. 1990; Henriques 2006). Nevertheless, the so-called “Unique Manuka Factor” (UMF) was Introduced some years ago for marketing purposes, leading to a classification of premium products based on microbiological assays. A UMF of 10, for instance, has the same antibacterial activity to a 10% solution of phenol (Allen et al. 1991). The purpose of this study was to assess the efficacy of manuka honey (a plant extract) in improving healing after third molar surgery.

MATERIAL AND METHOD
The total number of patients included in this study is 20. All patients with impacted mandibular 3rd molar were taken in this study. Only mesioangular mandibular impacted 3rd molar tooth were taken for this study. All surgery was done by a single surgeon at the same centre. Informed consent was taken from each patient prior to 3rd molar surgery. Ward’s incision was used for every patient with buccal guttering was done followed by elevation of impacted third molar. Manuka honey was placed using dropper in the socket and flaps were sutured using 3-0 silk suture. The Levels of postoperative discomfort was measured on seventh day after surgery. The patient was asked to fill in a questionnaire on the 7th day following surgery. This questionnaire is used to assess postoperative discomfort in patients who had third molar surgery. Patient’s ability to enjoy food; speak properly; perceive altered sensations, appearance, pain, and sickness; and interference with daily activities were taken into consideration. To assess facial swelling, the distances between the labial commissure and the tragus, and between the lateral canthus and the gonion was measured before surgery, 3rd day and 7th day. Change of the masticatory muscles status was also checked, mouth opening ranges was checked by measuring the distance between the upper and lower incisors before surgery, 3rd day and 7th day. Pain and Change of pain was measured using a Visual Analog Scale on 3rd day and 7th day. The presence or absence of alveolar osteitis was assessed on the 3rd and 7th day following surgery.
Figure 1. Ward’s incision

Figure 2. Extracted socket

Figure 3. Manuka honey placed in socket

Figure 4. Closure done using 3-0 silk suture
RESULTS

A total of 40 patients were assessed who met the search criteria. The participants were split into two classes. The Manuka Honey group had 20 participants, while the control group had another 20. The postoperative amount of mouth opening was measured with Vernier calipers and to assess facial swelling, the distances between the labial commissure and the tragus, and between the lateral canthus and the gonion was measured before surgery, 3rd day and 7th day, bilaterally. Figure 1 depicts the active Manuka Honey with an activity level of 20 that was used in this analysis. Figures 2 depicts without Manuka Honey with an activity level of 20 that was used in this analysis. Compared to the Manuka group, the control group's VAS scores according to Wilcoxon signed ranks test was significantly higher (P < 0.05; Table 1). The two bilateral impacted 3rd molars were distributed in two group ([group I] with manuka honey & [Group II] without manuka honey) FSB1-Facial swelling one site, FSB2- Facial swelling second site, FS3D1 facial swelling day-3 site1, FS3D2 facial swelling day-3 site 2, FS7D1 facial swelling day-7 Site 1, FS7D2 facial swelling day-7 Site 2, MOB-mouth opening, MO3D- mouth opening in 3rd day, MO7D- mouth opening in 7rd day.

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Manuka Honey comparison with normal medicinal regimen

GROUP | FSB1 | FSB2 | FS3D1 | FS3D2 | FS7D1 | FS7D2 | MOB | MO3D | MO7D
1  | 100  | 100  | 115   | 115   | 100   | 100   | 41  | 39   | 40
1  | 108  | 105  | 115   | 114   | 107   | 106   | 47  | 44   | 47
1  | 126  | 125  | 135   | 130   | 126   | 125   | 49  | 39   | 49
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1  | 112  | 109  | 119   | 111   | 110   | 109   | 43  | 37   | 43
1  | 100  | 96   | 103   | 98    | 100   | 96    | 42  | 39   | 41
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2  | 119  | 117  | 123   | 118   | 120   | 120   | 45  | 42   | 42

Comparison of pain scores between two time intervals by Wilcoxon Signed Ranks Test

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*Significant p<0.05

Wilcoxon Signed Ranks Test

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a. VAS 3M < VAS 3RD
b. VAS 3M > VAS 3RD
c. VAS 3M = VAS 3RD
DISCUSSION
Although very well known as a food, honey is not well recognised as a medicine, yet it is one of the oldest medicines known and has continued to be used as such throughout the ages. However, it has been “rediscovered” in more recent times by the medical profession. The antibacterial activity of honey has been known for almost as long as bacteria have been known to be the cause of infection, and the large amount of published research over the years reveal the broad spectrum of action and the potency of this activity has been comprehensively reviewed. Mavric et al. 2008 demonstrated surprisingly high amounts of 1, 2 dicarbonyl compound methylglyoxal are present in certain samples of Manuka honey. Methylglyoxal is a unique antibacterial compound found in high concentrations in Manuka honeys from New Zealand and directly responsible for the specific antibacterial activity of these samples. In their study, concentrations of methylglyoxal as measured according to Mavric et al. (2008) ranged from 25 to 709 mg/kg. Among the samples analysed by Adams et al. (2008), 30 samples had antibacterial activities higher or equal 10% equivalent phenol concentration.

CONCLUSION
The use of manuka honey in extraction socket has a promising effect in healing. Although to examine the efficacy of manuka honey a comparative study is required along with larger sample size.

REFERENCE

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