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RESEARCH ARTICLE

CASE STUDY: WOUND MANAGEMENT WITH ACTIVE MANUKA HONEY+20 UMFR

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ABSTRACT

Manuka honey has been assessed for its nutritional and phytochemical composition, to predict doable clinical uses. The past and up to date literature reports the fortunate use of honey to manage a spread of wound aetiologies. Bacterial Infection of a wound could lead to tissue death, native drive, vessel occlusion and a rise in wound size, ultimately swiftness the healing method. Studies have reported that it's going to with modestly decrease wound-healing time, act as a medicament, deodorize wounds, and enhance cell proliferation and enlargement in vitro. The aims of the study were to achieve insight into the practical use of Active Manuka honey in wound management. To gather the mandatory information, photographs, acetate tracings, data monitoring and patient comments and observations were accustomed to add greater responsibility and validity to the findings. The wounds were dressed weekly with Manuka honey. The results obtained showed all seven patients achieved 100% reduction in visually wound size among average thirty days (four-week treatment period). Odour was eliminated and pain reduced. The conclusions drawn were that the utilization of Active Manuka honey was associated with a positive wound-healing outcome in these seven cases.

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INTRODUCTION

Manuka honey is distinguished as the best effective medicinal honey, however remains for the most part undiscovered. *Leptospermum scoparium* (Manuka) is a shrub belonging to the Myrtaceae family. This plant could a native of South East Australia and New Zealand (Weston *et al.,* 1999). The unique health value of this honey is ascribed to it phytochemical content of mainly methylglyoxal, however conjointly levels of hydrogen peroxide and D-glucono-*δ*-lactone that are derived from glucose (oxidation) and propolis (Allen *et al., 1991* and Russell *et al.,* 1988). Due to its anti-bacterial, anti-ulcer properties, wound care, it's usually conversationally referred as a 'healing honey'. Manuka honey is employed each internally and outwardly. Manuka honey has been assessed for its organic process and phytochemical composition, to predict potential clinical uses. It's wealthy in glucose oxidase that catalyses glucose to supply hydrogen peroxide (H_2O_2) that exerts anti-bacterial properties in the vicinity. D-glucono-*δ*-lactone is in addition created that reduces the pH scale of the honey and in addition to the high sugar osmolarity exerts natural anti-bacterial properties and renders the honey shelf-stable.

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The tide water activity of honey usually (0.6–0.75) together renders it unlivable for several microorganisms (Oddo *et al.,* 2008). The antimicrobial activity of MGO forms a close to excellent linear correlation therewith that of phenol, permitting its activity to be expressed as an equivalent phenol concentration (%w/v) usually called as its unique manuka factor (UMF) (Atrott*et al.,* 2009). The UMF rating given to Manuka honeys will increases with antimicrobial activity and ranges upwards from UMF 5+ (detection limit of the assay) (Adams *et al.,* 2008). Manuka honey prepackaged into medical devices for clinical use should be sterilized and have a UMF rating of 10+ to confirm effective antimicrobial activity (Molan *et al.,* 1992). The unique manuka factor isn't exaggerated by the catalase enzyme originate in body tissue that honey will come into contact with if placed in a wound nor is it affected by light or heat. This makes it unique because the other factors causing antibacterial activity in honey will be destroyed by enzyme or heat. Methylglyoxal, the chemical compound type of pyruvic acid is that the chief anti-bacterial compound throughout this honey. Unique manuka factor (UMF) is quality marker to identify and market pure manuka honey. The broad spectrum antibacterial activity of manuka honey has been valid through varied clinical trials and *in vivo* bacterial challenges ranging from oral infections, intestinal inflammation to nosocomial pathogens and eczema and skin irritations.

The potential of manuka honey with UMF +15 was investigated in reducing dental plaque and clinical levels of periodontitis.

The warm, dampish and nourishing surroundings of wounds are a perfect medium for bacterial growth due to the exposure of underlying tissues and exaggerated blood perfusion. The majority of open wounds can become contaminated by bacteria; but, this doesn't essentially impair the healing method. High levels of bacteria, bacterial biofilms and multi-resistant organisms will considerably have an effect wound healing. Infection of a wound could lead to tissue death, vessel occlusion, local hypoxia and a rise in wound size, ultimately retardation the healing method (Fong *et al.,* 2006). Recurrent wound infections complicate the healing methodology, and can exacerbate inflammation of the wound site. However, cytokines and completely different mediators of inflammation may cause 'out-of-control inflammatory response' and hamper wound management (Pesce *et al.,* 2013). Manuka honey has been proven to be a competent agent in healing diabetic wounds, acne, blood vessel ulcers, psoriasis, eczema, burns.

Studies have reported that manuka honey could with modestly decrease wound-healing time, act as an antiinflammatory, deodorize wounds, and enhance cell proliferation and enlargement in vitro (Du Toit *et al.,* 2009). Though active manuka honey is believed to own a broad-spectrum antimicrobial action, vary considerably in activity (Mullai and Menon, 2007). The antimicrobial activity of most honeys is coupled to the assembly of hydrogen peroxide by the enzyme glucose oxidase that, combined with high acidity, exerts an antimicrobial effect (French *et al.,* 2005). Additionally, unidentified phytochemical factors (non-peroxide factors) exert a high antimicrobial effect in Active Manuka honey don't breakdown once treated with heat or light and are still effective even once diluted (Olaitan *et al.,* 2007).

Over the years honey has been fractionated into varied elements as a additional complete understanding of the composition of honey and also the probably antibacterial components has been wanted (Weston *et al.,* 1998 and Suarez-Luque *et al.,* 2002). Despite the various investigations into the organic, inorganic phases and active ingredients in honey, manuka honey is continues to be used medically as a complete honey, because the active elements are still for the most part unknown. Recently it has been discovered that a proportion of the non peroxide antibacterial activity found in manuka honey might created by methylglyoxal (Adams *et al.,* 2007 and Mavric *et al.,* 2008). This is often an extremely reactive precursor of advanced glycation endproducts. It has been detected in manuka honeys via HPLC with UV detection and conjointly by o-phenylenediamine derivatization. Each ways showed concentrations of methylglyoxal within the honey between around 38-828 mg/kg, that related with the non-peroxide antibacterial activity of the honeys (Adams *et al.,* 2008). Though these two studies have shown activity from this fraction of manuka honey it is unlikely that this may alter the products presently on the market until additional extensive studies are done showing that this chemical is indeed the only part of honey causing the helpful antibacterial and wound healing effects seen in previous studies. This study aims to feature to the present body of information and explore the opportunity of further scientific research into the employment of honey in wound management.

METHODS

Within hierarchies of proof, case studies are generally seen to air a par with skilled opinion (Dealy, 2000). If undertaken prospectively with clearly outlined multiple sources of data assortment and a documented chain of proof, case studies can add breath to our information and knowledge of caring for patients with tissue viability problems (Delay, 2000). The intention of involved case studies is to use the development to be studied (wound) to produce approaching into a specific issue (Active Manuka honey). The aims of this study were to attain approaching into the sensible use of Active Manuka honey in wound management and document the changes within the wound with relevancy size, odour and pain levels practised by the patient. The key objective was to check the possibility and suitability of exploitation Active Manuka honey in an exceedingly randomized controlled experiment. Rather than one case study of restricted worth, a case series of seven consecutive cases of wound with full thought to clinical standing and patient consent was conducted. Moral approval for the study and consent from all patients were obtained. All wounds were dressed once or twice weekly as necessitated by levels of wound exudate.

Active Manuka honey 20+ UMF^R was used. 5 g per 20cm2 of Manuka honey was applied to non adherent dressing. Secondary dressings and bandages as appropriate were then used. Wounds were measured via clear acetate tracings and fine tip permanent pen. The patient was asked to investigate any facet of the utilization of honey, significantly their perception of odour related to the wound. Images were taken at the beginning and therefore the finish of a four-week period. Four weeks was chosen because the time-frame as the literature would advocate that if a wound shows no signs of improvement with a selected intervention over a 4-week period, then a amendment of treatment or any investigation is also necessary. As this was a single site, case report format each 4 weeks was additionally deemed by the practitioner/ researcher to be a sensible and realistic time-frame for each patient to satisfy the aims of the study.

RESULTS AND DISCUSSION

Medical-grade Active Manuka honey appears to be valuable for stimulating new tissue growth, moist wound healing, fluid handling and epithelialization promotion. The clinical reports that Active Manuka honey +20 UMF^R dressing was very good at debriding, easy to apply and comfortable for the patients, who reported no pain at any time of the dressing changes. In Active Manuka honey dressing patient's healthy granulation appeared in one week. The odour and pain of the wound controlled effectively. All seven patients achieved 100% reduction in visually assessed wound size in four-week treatment period (average 30 days). This small-scale study raised many questions and points of interest with regard to the use of Active Manuka honey in wound management. There are many reports of honey clearing malodour from wounds; this was also the outcome in this study. Patients were encouraged to verbalise any episodes of malodour, but none were reported or recorded after the first application. The desired frequency of application of honey to wounds has not been established. Current management of patients with wounds often involves once-weekly dressing change. More frequent dressing change is applied depending on the clinical need.

Figure 1. Wound images before and after four week Active Manuka honey dressing

This has resulted in improved quality of life for patients, as they are not bound to frequent appointments and leaking dressings. Thus the use of honey daily or alternate days in chronic wounds could impinge on a person's independence, unless they could change their own dressings. The benefits obtained by once-weekly dressing change with honey cannot be ignored, and thus the possibility of honey feeding bacteria and causing infection was not borne out in this case series. Nelson (Nelson, 2000) highlights that an improvement seen with a new treatment does not allow one to attribute the effect to the intervention, as most wounds will eventually improve; thus, it is particularly problematic to attribute cause and effect using case reports. While this is true, descriptive research frequently precedes experimental studies, as it often serves to generate predictions (hypothesis) about the relationship among the various phenomena studied, which can then be tested in an experimental study which may confirm or reject the prediction (Carter, 2000).

Conclusion

In this study, evidence promotes the role of Active Manuka honey +20 UMF^{R} in wound care as an effective and viable option for debridement and the maintenance of an optimal environment for wound healing. Active Manuka honey gressing in particular has been shown to safely, effectively debride wounds that are not otherwise appropriate for undergoing sharp particular reference to wounds of different aetiology. Further studies should investigate the potential of honey in deodorizing wounds, which may be of particular interest in fungating lesions. The randomised controlled trial is the gold standard to test efficacy in comparison with standard therapy and is proposed as the way forward in further studies on the use of Manuka honey in wound care.

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