



REVIEW ARTICLE

Manuka Honey and Pediatric Patients: A Review

Paola Martina Marra, DDS, MS^{1*}, Rossella Santoro, MS², Giuseppe Diana, MS², Angelo Itro, MD, MS¹ and Annalisa Itro, PhD¹



¹Complex Operative Unit of Stomatological Surgery in Developmental Age, University of Campania Luigi Vanvitelli, Italy

²Multidisciplinary Department of Medical-Surgical and Dental Specialties, University of Campania Luigi Vanvitelli, Italy

*Corresponding author: Paola Martina Marra, DDS, MS, Complex Operative Unit of Stomatological Surgery in Developmental Age, University of Campania Luigi Vanvitelli, Naples, Italy, Tel: +39-3338626207

Abstract

Manuka is a monofloral honey with New Zealand and Australian origins. It takes its name from the *L. scoparium* or tea-tree (manuka or tea tree) plant, whose flowers rich in pollen and nectar feed the bees during the production of honey. To be labeled as "New Zealand manuka honey", bees must use at least 70% of the pollen and nectar from manuka. This honey has nutritional properties similar to those of other types of honey even if, containing some active ingredients, it seems to inherit many phytotherapeutic and medicinal characteristics. Not surprisingly, the manuka plant and honey are used in traditional Maori medicine and in contemporary pharmacology.

Keywords

Children, Manuka honey, Oral cavity

Introduction

Honey is a remedy with a several virtues: Emollient, laxative, detoxifying, nourishing and moisturizing. It is particularly used for lungs and intestines. In fact, it is used as a laxative in case of constipation, as an emollient in chronic bronchitis, it relieves inflammation of the mouth and throat, while it is not recommended in case of chronic diarrhea and in newborns as they are very sensitive to its laxative action.

The secret of honey is in the mix of sugars, vitamins, essential amino acids, enzymes, mineral salts, growth stimulating factors and essential oils that act as antibiotics and have interesting therapeutic effects. In particular, the sugar component of honey consists of fructose (70%) and glucose (30%), the percentages of which vary from honey to honey depending on the origin of

the nectar, as well as the quantity of vitamins, mainly represented by vitamins group B, vitamin C, vitamin K, carotene and pantothenic acid.

There is sufficient evidence that recommends the use of honey in the management of wounds and burns, thanks to the antibacterial, antiviral, anti-inflammatory and antioxidant properties of its components [1-7].

In particular, a large number of studies on the therapeutic use of honey have focused on Manuka honey produced by the species *Leptospermum scoparium*, a flowering plant native to New Zealand and Australia [7-15]. Dihydroxyacetone, methylglyoxal, antioxidants and flavonoids are unique and natural components of Manuka honey and have manifested a wide range of biological effects, including antibacterial, antithrombotic, anti-inflammatory, ant allergic and vasodilator effects [16].

Several clinical studies indicate honey as an excellent detergent-disinfectant for infected wounds [4,7,9,11]. Manuka honey has been recently approved by the FDA (Food and Drug Administration) for the treatment of burns and ulcers. The physical and bioactive properties of honey, in fact, positively affect the wound healing process as it determines an increase in the release of oxygen from the hemoglobin, creating an unfavorable environment for the activity of proteases [6-9]. In addition, honey stimulates the release of peripheral monocytes of cytokines and chemokines, such as TNF α , IL 6, IL 1 β and TGF β , accelerating the healing process [17,18].

From an oral point of view, several studies have as-



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certained that honey is not a cariogenic agent [19-33], but rather has a bactericidal action as it contains inhibin, a substance that performs an inhibitory action against *Streptococcus mutans*, reducing the production of acids and the phenomena of demineralization of enamel and dentine. Therefore, pure honey, rich in inhibin, does not present a danger to the teeth, indeed if used in place of sugar, it protects them.

Abdelmegid, et al. [25] in fact, showed that irrigation of the oral cavity with a solution of honey and green tea, for 2 minutes can reduce the *S. mutans* count in children aged 7 to 10 years. In addition, English, et al. [30] and Atwa, et al. [32] reported that this natural product prevents the aggregation of dental plaque, gingivitis and other gum disease. According to many researchers, therefore, honey would have an effective soothing effect on gingivitis and periodontal diseases [33-34].

Soni, et al. [13] assessed the effect of honey on the resolution of alveolar osteitis by reporting that C-reactive protein levels decreased significantly after honey treatment, resulting in rapid wound healing. In addition, severity of pain, erythema and swelling also decreased significantly. Honey-based medicines can therefore be used to treat alveolar osteitis, a frequent post-operative complication of permanent tooth extractions (mandibular molars and wisdom teeth).

El-Haddad, et al. [17] conducted a pilot study to evaluate the clinical efficacy of the local application of honey for the treatment of some common inflammatory, vesiculobullous and ulcerative lesions of the oral cavity. Their injuries included recurrent aphthous stomatitis, recurrent intraoral herpetic ulcers, atrophic/erosive oral lichen planus, oral candidiasis and oral psoriasis. The results showed that in all subjects, pain, itching, and injury sizes decreased and patients in general reported improvements in injuries based on the parameters described in the study. Topical application of honey could in fact prevent or in any case reduce secondary infection, which is very common in many vesicular and ulcerative lesions, such as RAS, herpes and lichen planus. This ability of honey has been attributed to its ability to decrease the synthesis of prostaglandins in the area where it is applied, to increase the formation of nitric oxide in the wound area, and to reduce the proliferation of bacteria and fungi, and also to its properties antioxidants.

Hwang, et al. [20] assessed the effect of honey on postoperative pain after tonsillectomy in a systematic review reporting that the pain was less; therefore, there was less need for analgesics than in the control group.

Other studies, [35,36] conducted on patients from 4 to 9 years of age undergoing extraction of deciduous molars, have shown how the application of Manuka honey for 45 min in the post-extractive alveolus is able to accelerate its healing and reduce the risk of complications such as infections and pain. Although it

may seem that there is no need to use honey in children due to the low complication rate resulting from the extraction of the teeth and the rapid healing process in these subjects, it is nevertheless possible to use honey to improve the process of wound healing from more extensive surgeries such as those to remove mastodons and odontomas, the extraction of multiple teeth under general anesthesia, and also frenectomy procedures. In these cases, honey can play an important role in reducing pain, swelling and postoperative complications, and speeding up healing [35,36].

In addition, a large number of children suffer from systemic conditions, such as leukemia whose therapeutic procedure can lead to cyclic neutropenia and oral ulcers. Given the compromised immune system, these patients show very slow healing and have a higher risk of infection. Therefore, the use of an effective, inexpensive and available drug that can speed up the wound healing process in these children may be particularly recommended.

Ultimately, therefore, the use of honey is a simple and inexpensive technique, which has no side effects and is easily tolerated by the child for its pleasant taste and aroma, also improving the approach to the intervention from a psychological point of view. Therefore, its use is recommended after minor and even major surgeries in the oral cavity.

Conflicts of Interest

The authors declare no conflicts of interest.

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