

# Honey

## Andrew Kochan, MD

**Rediscovering the Antibiotics of the Hive**, Boukraa, L Sulaiman SA, Dept. of Pharmacology, School of Med. Sci., Univ. Sains Malaysia, Health Campus, 16150 Kubang Kerian, Kelantan, Malaysia.

- Antibiotic-resistant strains such as epidemic strains of methicillin-resistant *Staphylococcus aureus* (MRSA) and Vancomycin resistant *Enterococcus* (VRE) have been found to be as sensitive to honey as the antibiotic-sensitive strains of the same species.

### **In Vitro Anti-Staphylococcal Activity of Honey and Two Standard Antibiotics**

- 50 isolates of *Staph aureus* and *Staph albus* were exposed to dilutions of honey and Ampicillin and Cloxacillin. “Cloxacillin recorded higher antibacterial activity than Ampicillin but both exerted less antibacterial activity than honey.”  
-Adeleke O.E., et al., *Annals of Burns and Fire Disasters*, vol XX, n.1, March 2007

### **Effects of Manuka Honey**

- Medihoney™ is an effective antibacterial agent and manages wound infection caused by a range of multi resistant strains of bacteria. This medical grade honey is filtered, gamma irradiated, produced under exacting standards of hygiene and approved by the FDA– Narelle M. George; Keith F. Cutting, *Wounds*, 2007; 19(9): 231-236, *European Journal of Clinical Microbiology & Infectious Diseases*, October 8, 2009
- Manuka proven to have value in treating sloughy venous ulcers. Desloughing significantly improved healing outcomes. Manuka honey vs hydrogel: a prospective, open label, multicentre randomized controlled trial to compare desloughing efficacy and healing outcomes in venous ulcers. Gethin G, Cowman S., *J Clin Nurs*. 2009; 18(3):466-74
- Using Manuka honey as part of a sinus rinse for alleviating infection in the upper airway could offer an antibiotic alternative to treat antimicrobial resistant respiratory infections, particularly deadly bacteria found in Cystic Fibrosis (CF) infections. Roberts, Aled E. L. et al., *Frontiers in Microbiology* 24 April 2019 | <https://doi.org/10.3389/fmicb.2019.00869>

**Anti-Yeast Activity** – All of the 40 yeast strains (*Candida albicans*, *C. krusei*, *C. glabrata* and *Trichosporon* spp.) tested were inhibited by honeys in this study. Multifloral honey is generally more inhibitory than either eucalyptus and orange blossom honeys. -Antifungal Activity of Turkish Honey Against *Candida* spp. and *Trichosporon* spp: An In-vitro Evaluation, *Medical Mycology*, Volume 47, Issue 7 November 2009, 707-712

### **Honey and Cough**

- Honey may modestly decrease frequency and severity of cough compared with Dextromethorphan, or no treatment. - Do OTC remedies relieve cough in acute upper respiratory infection? *J Fam Pract*, 2009 Oct; 58(10):559a-c
- Significant differences in symptom improvement were detected between treatment groups, with honey consistently scoring the best and no treatment scoring the worst. - Effect of Honey, Dextromethorphan, and No Treatment on Nocturnal Cough and Sleep Quality for Coughing Children and their Parents, I. M. Paul, et. al., *Arch Pediatr Adolesc Med*. 2007;161(12):1140-1146

**Gastric Ulcer and Dyspepsia Treatment** – A placebo-controlled trial of honey for gastric ulcer and dyspepsia resulted in a 66% cure rate.

### **Dental Hygiene**

- A Pilot study suggests that dental use of honey may improve plaque and gingivitis - The effects of manuka honey on plaque and gingivitis: a pilot study. English HK, Pack AR, Molan PC., *J Int Acad Periodontol*. 2004;6:63-67.

**Burns** – 900 participants with partial-thickness burns (second degree) were randomly assigned to receive either honey dressings or other dressings. Honey was applied directly to the burns and covered with sterile dressings on alternate days. Those whose burns were treated with honey had faster healing and less scarring than those treated with other dressings. In the case of full-thickness burns (third degree), however, honey has been found to be inferior to other treatments.

- If applied immediately, honey reduces blistering of burns and speeds regeneration of new tissue

**Wound Healing** – As of 2007 scientists had published 22 trials (17 randomized) involving 2,062 patients treated with honey, as well as an additional 16 trials that were performed on experimental animals. Honey was found to be beneficial as a wound dressing in the following ways:

- Honey's antibacterial quality not only rapidly clears existing infections, it protects wounds from additional infection (sugar content and pH, Glucose Oxidase enzyme activity produces H<sub>2</sub>O<sub>2</sub> (Hydrogen Peroxide), Hygroscopic nature of honey dessicates bacteria)
- Honey debrides wounds and removes malodor.
- Honey's anti-inflammatory activity reduces edema and minimizes scarring.
- Honey stimulates growth of granulation and epithelial tissues to speed healing.
- Honey activates keratinocytes and may accelerate the wound healing process with the up-regulation of expression of certain cytokines (TNF-a, IL-1b, and TGF-b) and MMP-9 – *Effect of Honey and Its Major Royal Jelly Protein 1 on Cytokine and MMP-9 mRNA Transcripts in Human Keratinocytes*, Exp Dermatology, 2009 Oct. 21
- Topical applications under controlled conditions have shown accelerated wound healing in animals (Bergman et al., 1983, El Banby et al., 1989) and of experimental burn wounds in rats (Burlando, 1978) but also of various types of wounds, including post-operative ones in humans (Cavanagh et al., 1970; Kandil et al., 1987 and 1989; Effem, 1988 and Green, 1988)
- Honey applied directly on open wounds, sores, bed sores, ulcers, varicose ulcers, and burns, in its pure, unprocessed form, helps against infections, promotes tissue regeneration, and reduces scarring (Hutton, 1966; Manjo, 1975; Armon, 1980, and Dumronglert, 1983).
- Beneficial in wound care for cesarean section - Effects of topical honey on post-operative wound infections due to gram positive and gram negative bacteria following cesarean sections and hysterectomies. Al Waili NS, Saloom KY., *Eur J Med Res*. 1999;4:126-130.
- Honey will heal nonhealing wounds that do not respond to other treatments - Evaluation of a honey-impregnated tulle dressing in primary care. Stephen-Haynes J., *Br J Community Nurs*. 2004;Suppl:S21-S27.
- Honey heals chronic, surgical, and traumatic wounds - Honey-medicated dressing: transformation of an ancient remedy into modern therapy. Ahmed AK, Hoekstra MJ, Hage JJ, et al., *Ann Plast Surg*. 2003;50:143-147.
- Strongest evidence available on honey supports the use of honey for venous leg ulcers - Honey as a topical treatment for wounds. Jull AB, Rodgers A, Walker N., *Cochrane Database Syst Rev*. 2008, Issue 4. Article No.:CD005083.

### **Blood Sugar Control**

- In healthy individuals, the consumption of honey produced lower blood sugar readings than the consumption of the same quantity of sucrose (Shambaugh et al., 19910)
- Compared to dextrose and sucrose, honey caused lower elevation of blood sugar in diabetics & reduced blood lipids, homocysteine and CRP in normal and hyperlipidemic persons (Al-Waili, 2004)
- Hypoglycemia – Honey can be used and absorbed sublingually. Honey has a low glycemic index so it doesn't stimulate insulin as much as other sweeteners.

## Ophthalmological Problems

- Dry eye syndrome, Cataracts, Herpetic keratitis, Corneal abrasions and ulcers
- Ancient texts and the Koran advocate honey for cataracts.
- Local honey as an ointment (i.e. Concentration 100%) is very effective in treatment of keratitis even in the presence of ulceration. Honey will be effective whatever the cause of keratitis (inflammation of the cornea) because it has antimicrobial (including virus and fungi), anti-inflammatory and wound healing effects.
- After treatment with 20% honey eye drops improvement of ocular changes was observed in most patients with dry eye syndrome compared to conventional treatment with artificial tears. 20% honey eye drops had a positive effect on the state of the cornea. - J. Jankauskeina, D.Jankauskaita, Kaunas University of Medicine Eye Clinic, Mickeviciaus 9, Kaunas, Lithuania
- In Romania Dr. Popescu has treated thousands of patients with a 2% solution of honey in saline in the eyes for 10 days, followed by royal jelly in the eyes.
- Dr. Mansour in Egypt treated 32 patients with cataracts with one drop in the eye 4 or 5 times a day and had good improvement in visual acuity.

## Diabetic Ulcer Treatment

- Dr. Jennifer Eddy at the University of Wisconsin salvaged a severely gangrenous diabetic foot ulcer using honey treatment – Eddy, JJ, Gideonsen MD, *Observations from Practice: Topical honey for diabetic foot ulcers*, J of Family Pract, 2005; 54:533-535
- 59 patients with diabetic ulcers, burns, traumatic ulcers, gangrene, and other types of wounds for periods of between 1 month and 2 years. 51 of 59 wounds had been infected prior to honey treatment. All were free of infection within one week of starting honey dressing applications. In addition, inflammation and odor were markedly reduced and healing rapidly ensued – *J of Wound, Ostomy and Continence Nursing*, 2002; 29:295-300

## Facilitation of Sleep – Mike McInnis, MRPS presented at the First International Symposium on Honey and Human Health, 1/08/2008, Sacramento, CA

- Honey improves, facilitates and lengthens restorative sleep
- Insures adequate liver glycogen stores for 8 hrs. of sleep thus limiting early morning release of cortisol and adrenalin
- Stabilized blood sugar levels
- Contributes to the release of Melatonin

## Products of Apiculture and Preventative Maintenance of Aging –*Adv Gerontol*, 2008; 21(2)252-7

- Examination of 193 beekeepers daily using honey in quantity of 57.2 +/-8.6 grams showed that the biological age of 70% of beekeepers was lower than that of the average population, 15% of beekeepers were the same, & 15% had a higher biological age than the average population. The average biological age of beekeepers was less than persons who were not using bee products.

## Sports Performance

- Endurance. “We found honey to be one of the most effective forms of carbohydrate gels to ingest just prior to exercise. This could translate into greater endurance during a workout or race. Honey...relatively mild in its effects on blood sugar.” Dr. Richard Kreider, University of Memphis Exercise and Sport Nutrition Laboratory. Compared to sugar, honey has a lower glycemic index and a lesser insulin response with subsequently less fatigue later.
- April 4, 2003- A new study presented at the annual Experimental Biological meeting indicates that using honey as a carbohydrate source during exercise significantly improved performance and power during endurance cycling trials.