



Honey and its uses in oral diseases-An overview

Santosh R. Patil, Ravi Kumar Gudipaneni

College of Dentistry, Aljouf University,
Sakaka, Aljouf , Saudi Arabia

Address for correspondence:

Dr. Santosh R. Patil,
College of Dentistry, Aljouf University,
Sakaka, Aljouf ,
Saudi Arabia.
drpsantosh@gmail.com

Received: April 20, 2016

Accepted: April 22, 2016

Published: May 02, 2016

ABSTRACT

Recently, much attention has been given to natural products with health-promoting benefits. Historically, honey has been used as an eco-friendly medicine for many years in the management of wounds, burns, ulcers, cardiovascular, dermatologic, gastrointestinal and ocular disorders. Studies have shown that honey possesses potent broad-spectrum activities, like anti-inflammatory, anti-bacterial, anti-viral, antioxidant and even anti-cancer. In this overview various composition, properties and application of honey has been described with specific relation to oral diseases.

KEY WORDS: Apitherapy; Honey; Oral diseases

INTRODUCTION

Honey is a secondary product of blossom nectar and the upper air digestive tract of the honey bee, which is concentrated through a parchedness process inside the colony. Honey has an exceptionally complex compound creation that changes contingent upon the organic source. It has been utilized both as sustenance and solution since antiquated times. Human utilization of Honey is followed to somewhere in the range of 8000 years back as portrayed by Stone Age depictions. Notwithstanding vital part of regular Honey in the conventional pharmaceutical, amid the previous couple of decades, it was subjected to lab and clinical examinations by a few exploration gatherings and it has found a spot in present day drug. Honey has been accounted for to inhibitorily affect around 60 types of microscopic organisms, a few types of growths and infections [1, 2].

COMPOSITION AND PROPERTIES OF HONEY

Cell reinforcement limit (antioxidant capacity) of honey is imperative in numerous illness conditions and is because of an extensive variety of mixes including phenolics, peptides, natural acids, chemicals, and Maillard response items. Honey has additionally been utilized as a part of some gastrointestinal, cardiovascular, incendiary and neoplastic states. Honey is a characteristic item that has been generally utilized for its helpful impacts. It has been accounted for to contain around 200 substances. Nectar is made principally out of fructose and glucose additionally contains fructo-oligosaccharides and numerous amino acids, vitamins, minerals and compounds. The organization of nectar differs relying upon the plants on which the honey

bee nourishes. In most ancient cultures, honey has been used for both nutritional and medical purposes [3,4]. The belief that honey is a nutrient, a drug and an ointment has been carried into our days, and thus, an alternative medicine branch, called apitherapy, has been developed in recent years, offering treatments based on honey and other bee products against many diseases including bacterial infections. At present a number of honeys are sold with standardized levels of antibacterial activity. The *Leptospermum scoparium* (*L.scoparium*) honey, the best known of the honeys, has been reported to have an inhibitory effect on around 60 species of bacteria, including aerobes and anaerobes, gram-positives and gram-negatives [5].

APPLICATIONS OF HONEY IN ORAL DISEASES

Honey has had an esteemed spot in conventional medication for quite a long time. Notwithstanding, it has a constrained use in present day solution because of absence of logical bolster. For quite a while, it has been watched that nectar can be utilized to overcome liver, cardiovascular and gastrointestinal issues. Old Egyptians, Assyrians, Chinese, Greeks and Romans utilized nectar for wounds and illnesses of the digestive system. Since a couple of decades back, nectar was subjected to lab and clinical examinations by a few exploration bunches. The most wonderful revelation was antibacterial action of nectar that has been specified in various studies [6-10].

The adequacy of honey is best when utilized at room temperature. Warming nectar to 80 degrees for 1 hour diminished antimicrobial action of honey. When honey was stored for 5 years, its antimicrobial capacity was diminished,

while UV light introduction expanded its action against some of microorganisms.

Description about honey was written in the Holy Quran more than 1400 years before that wherein is healing for people. "And your LORD inspired the bee, saying "Take you habitations in the mountains and in the trees and in what they erect. Then, eat of all fruits, and follow the ways of your LORD made easy (for you)". There comes forth from their bellies, a drink of varying color wherein is healing for men. Verily, it is indeed a sign for people who think (Sura Al-Nahl, Aya 69)". Muhammad (PBUH) - the last Prophet of Islam, prescribed the utilization of honey for the treatment of diarrhea [11,12].

Honey has been depicted in antiquated and present day prescription as being successful in the recuperating of different contaminated injuries, there have been few reports of its use in the recuperating of blazes, ulcers and open wounds. It has been inferred that nectar is helpful in the treatment of post surgical injuries that are contaminated and don't react to customary systemic and nearby anti-infection agents treatment. The huge volume of written works reported the adequacy of nectar. It demonstrates that it might possibly be helpful to treat periodontal illnesses, mouth ulcers and different issues of oral health. Antimicrobial operators are basically vital in lessening the worldwide weight of irresistible ailments. In any case, as safe pathogens create and spread, the adequacy of the anti-toxins is reduced. This type of bacterial imperviousness to the antimicrobial specialists represents an intense danger to general wellbeing, and for all sorts of anti-microbials, including the significant final resort drugs, the frequencies of resistance are expanding worldwide [13-15].

Viability of honey in the treatment of oral ulcers and wounds has been reported in the literature. The information unmistakably illustrate that with the utilization of honey, no unfavorably susceptible response is evoked and no critical reactions were accounted for. Notwithstanding its important wholesome constituents, nectar has calming and cell reinforcement exercises that make it a reasonable normal subject for recuperating oral ulcers.

The counter bacterial, mitigating or hostile to oxidant, and dietary and physical properties of characteristic nectar, makes it an acceptable agent to enhance healing of oral ulcers. Honey adsorbs potential noxious agents from the mucous film, accelerate protein precipitation, so the discharge and incendiary exudates are adsorbed by the regular nectar, along these lines ensuring the basic tissues and improved typical recuperating and the epithelialization. Sticky gooey properties of the regular honey, empowers it stick to the ulcer. This instrument for covering the ulcer keeps it from optional contamination, also, keeps ulcer surface from direct correspondence from various chemicals and organisms. No unfavorably susceptible mucosal response or poisonous impacts have been noted with usage of honey [12].

Honey may give the premise to the advancement of novel therapeutics for patients with malignancy and disease related tumors. The instrument on how honey has anticancer impact is a matter of extraordinary interest. Among the systems proposed are restraint of cell multiplication, actuation of apoptosis, and cell-cycle capture. Honey and malignancy has feasible reverse relationship in the setting of creating countries where assets for growth avoidance and treatment are restricted. It has been stated that with these properties honey may prove its role in prevention of oral cancer along with malignancies which effects different body systems [16].

Honey additionally has been appeared to have antiviral properties. In a similar study topical utilization of honey was observed to be superior to anything acyclovir treatment on patients with recurrent herpetic ulcers [17].

In vitro studies have shown that honey solution may affect the monocyte activity and It was observed that mouth washes containing propolis (a resinous substance which bees use for sealing of their combs) possessed antimicrobial activity against *Streptococcus mutans* and can be used as an alternative treatment in dental caries prevention and in the reduction of plaque accumulation and polysaccharide formation. Recently it was reported that periodontal pockets irrigated with 10% propolis solution had a 95% decrease in gingivitis suggesting that subgingival irrigation with a propolis extract as an adjunct to periodontal treatment and more effective than scaling and root planning as it improves the clinical parameters and reduce the load of *P. gingivalis* [18-20].

Topical application of a propolis extract on oral *Candida albicans* lesions resulted in remission within three weeks and treatment efficacy was comparable to treatment with nystatin, the standard antifungal product used to treat these infections [21].

A study carried out on bicuspid for direct pulp capping also showed that propolis was as effective as calcium hydroxide. Based on these observations it has been concluded that propolis can be used along with calcium hydroxide as an intra-canal treatment [22].

A research carried on bacterial isolates which were obtained from subjects undergoing orthodontic therapy revealed that the honey was a more effective than other antibiotics tested, further suggesting that honey may reduce dental plaque formation and aid in controlling gingivitis associated with orthodontic procedures [23].

ADVERSE EFFECTS OF HONEY

Honey is moderately free of antagonistic impacts. Topical use of honey may prompt transient stinging sensation. Else it is portrayed in various structures as mitigating, diminishing agony, to be non-chafing and an easy dressing change. Hypersensitivity to honey is uncommon, yet there could be an unfavorably susceptible response to either dust or honey bee proteins in it. Exorbitant use of honey

may prompt parchedness of tissues which can however be restored by saline packs. Hypothetical danger of ascend in blood glucose levels may dependably be there when connected to extensive open injury in diabetics [12].

REFERENCES

1. Chow J. Probiotics and prebiotics: a brief overview. *J Ren Nutr.* 2002;12:76–86.
2. White JW. Composition of honey. In: Crane E, editor. *Honey: A Comprehensive Survey.* London: Heinemann; 1979. pp. 157–192.
3. Turkmen N, Sari F, Poyrazoglu ES, Velioglu YS. Effects of prolonged heating on antioxidant activity and colour of honey. *Food Chem.* 2006;95:653–657.
4. Al-Mamary M, Al-Meerri A, Al-Habori M. Antioxidant activities and total phenolics of different types of honey. *Nutr Res.* 2002;22:1041–1047.
5. Al-Jabri AA. Honey, milk and antibiotics. *Afr J Biotechnol.* 2005;4:1580–1587.
6. Medhi B, Puri A, Upadhyay S, Kaman L. Topical application of honey in the treatment of wound healing: a meta analysis. *JK Sci.* 2008;10:166–169.
7. Tonks AJ, Cooper RA, Jones KP, Blair S, Parton J, Tonks A. Honey stimulates inflammatory cytokine production from monocytes. *Cytokine.* 2003;21:242–247.
8. Mandal DB, Mandal S. Honey: its medicinal property and antibacterial activity. *Asian Pacific Journal of Tropical Biomedicine* 2011; 54: 60.
9. Lusby PE, Coombes AL, Wilkinson JM. Bactericidal activity of different honeys against pathogenic bacteria. *Arch Med Res* 2005; 36: 464-67.
10. Ali AM. Prevention of ammonia-induced gastric lesions in rats by natural honey. *J. Nutr. Environ. Med.* 2003;13:239–246.
11. El-Haddad SA, Al-Shawaf MD. Effect of honey for treatment of some common oral lesions: Follow up of 50 cases.
12. Gichki AS, Khwajakhail AA, Kurd SA, Ahmed K, Raisani MA. Healing effects of natural honey on oral minor aphthous ulcers among dental patients in quetta. *Pak Oal Dent J.* 2102;32(3):412-415.
13. Vardi A, Barzilay Z, Linder N : Local application of honey for treatment of neonatal postoperative wound infection. *Acta paediatr.* 1998; 87(4): 429-32.
14. Molan PC. The potential of honey to promote oral wellness. *Gen Dent* 2001; 49: 584-89. 18
15. Levy SB, Marshall B. Antibacterial resistance worldwide: causes, challenges and responses. *Nat Med* 2004; 10: 122-29.
16. Nor Hayati Othman, "Honey and Cancer: Sustainable Inverse Relationship Particularly for Developing Nations—A Review," *Evidence-Based Complementary and Alternative Medicine*, vol. 2012, Article ID 410406, 10 pages, 2012. doi:10.1155/2012/410406.
17. Mavric E, Wittmann S, Barth G, Henle T: Identification and quantification of methylglyoxal as the dominant antibacterial constituent of Manuka (*Leptospermum scoparium*) honeys from New Zealand. *Mol Nutr Food Res.* 2008, 52 (4): 483-489.
18. Viuda-Martos M, Ruiz-Navajas Y, Fernandez-Lopez J, Perez-Alvarez JA: Functional properties of honey, propolis, and royal jelly. *J Food Sci.* 2008, 73 (9): R117-R124.
19. Botushanov PI, Grigorov GI, Aleksandrov GA: A clinical study of a silicate toothpaste with extract from propolis. *Folia Med (Plovdiv).* 2001, 43 (1–2): 28-30.
20. Gebaraa EC, Pustiglioni AN, de Lima LA, Mayer MP: Propolis extract as an adjuvant to periodontal treatment. *Oral Health Prev Dent.* 2003, 1 (1): 29-35.
21. *Obaseiki-Ebor EE, Afonya TC.* In-vitro evaluation of the anticandidiasis activity of honey distillate (HY-1) compared with that of some antimycotic agents. *J Pharm Pharmacol.* 1984 Apr; 36(4):283-4.
22. de Rezende G.P., da Costa L.R., Pimenta F.C., Baroni D.A. In vitro antimicrobial activity of endodontic pastes with propolis extracts and calcium hydroxide: a preliminary study. *Braz. Dent. J.* 2008;19:301–305.
23. Patel R, Thaker V, Patel V, Shukla P, Bhatnagar P, Patel A. In-vitro study of changing antibiotic sensitivity and resistance by honey on gingival inflammation during orthodontic treatment-a preliminary report. *Orthodontic Cyber J.* 2010:3–8.

© **EJManager**. This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted, noncommercial use, distribution and reproduction in any medium, provided the work is properly cited.
Source of Support: Nil, Conflict of Interest: None declared