

## Honey is the Best Medicine in Ancient and Modern Era

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### Short Communication

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#### ABSTRACT

Antimicrobial operators are fundamentally basic in lessening the overall weight of irresistible sicknesses. In any case, as protected pathogens make and spread, the reasonability of the counter contamination operators is diminished. This kind of bacterial imperiousness to the antimicrobial administrators speaks to an extreme hazard to general prosperity, and for an extensive variety of antimicrobial, including the noteworthy last resort calms, the frequencies of resistance are growing around the world. Honey has been known since old time for its remedial and restorative utilize. Honey has cell reinforcement and antibacterial substance that restrain development of extensive variety of microscopic organisms and growths which causes different abscesses and distinctive contamination. Honey has blend of a wide range of phytochemical and mineral. It is great wellspring of various sorts of corrosive, vitamin and blend. Many reviews demonstrate that nectar indicates hemostatic, anti-inflammatory properties.

Antimicrobial agents are basically critical in diminishing the worldwide weight of infectious diseases. Be that as it may, as safe pathogens create and spread, the viability of the anti-infection agents is decreased. This sort of bacterial imperiousness to the antimicrobial operators represents an intense risk to general wellbeing, and for a wide range of antimicrobial, including the significant final resort sedates, the frequencies of resistance are expanding worldwide<sup>[1,2]</sup>. Along these lines, elective antimicrobial techniques are desperately required, and accordingly this circumstance has prompted a re-assessment of the restorative utilization of antiquated cures, for example, plants and plant-based items, including honey<sup>[3,4]</sup>.

Honey is an antiquated solution for the treatment of contaminated injuries, which has as of late been "rediscovered" by the medicinal calling, especially where traditional present day restorative specialists come up short. The principal composed reference to nectar, a Sumerian tablet composing, going back to 2100-2000 BC, notices nectar's utilization as a medication and a balm. Aristotle (384-322 BC), while examining diverse honeys, suggested paling honey as being "great as an ointment for sore eyes and wounds".

Honey is an inimitable gift of Mother Nature. The last scripture 'The Holy Quran' intimates honey as treatment for all kinds of diseases. It is awarded with the tenure of antimicrobial, hemostatic, anti-inflammatory, analgesic, and healing enhancing properties<sup>[5]</sup>. Since the ancient times remedial significance of honey has been acknowledged in the world's oldest medical literature. Due to antibiotic resistance in bacteria or same side effects of antibiotics products, there is reestablishment of natural product in modern medical practice in the world.

Azeredo et al. determined calorimetrically the protein content of *Apis mellifera* honey samples of different floral sources via Bradford method and also determined their physicochemical properties: colors, moisture, pH, Lugol test, Lund test, diastase index, reducing and non-reducing sugars and hydroxymethyl furfural contents<sup>[6]</sup>.

Adebiyi et al. detected twelve elements Ca, K, Ti, Cr, Fe, Mn, Ni, Zn, Br, Cu, Se and Rb in Nigerian honey samples via TXRF and infrared spectrophotometer techniques and found the range 1100-2700 ppm of potassium, range 152-362 ppm of calcium and 136-407 ppm of iron and no difference is noted in elemental contents with respect of different locations and also determine different functional groups carboxylic acids, nitrites, aldehydes, alkynes and ethers by using infra-red spectrophotometer<sup>[7]</sup>.

Ball explored the chemical composition of honey and reported that besides super saturated sugar solution in varying contains acids, vitamins, minerals, and amino acids are also present<sup>[8]</sup>. Gomes et al. analyzed antimicrobial characteristic and physicochemical parameters (Pollen profile, color, pH, acidity, moisture content, ash, electrical conductivity, apparent sucrose,

reducing sugars and HMF) of five commercial honey (Portuguese) and found to meet European Legislation (E C Directive 2001/110) except for apparent sucrose and HMF <sup>[9]</sup>.

Gulfraz et al. analyzed different honey types (Acacia, Zizyphus, Brassica and Citrus) of Pakistan for physico-chemical characteristics, composition and antimicrobial activity. The variation in composition of honey samples was observed due to different types of flora. ( $6.56 \pm 0.05$ ) higher pH for Zizyphus honey, ( $45.0 \pm 2.35$  mg/kg) activity for Citrus, ( $36.8 \pm 1.8\%$ ) moisture for Brassica and ( $32.7 \pm 0.49$  mg/kg) HMF for Acacia, whereas ( $2.1 \pm 0.04$  mg/kg) higher concentrations of proline and ( $0.38 \pm 0.1\%$ ) invert sugar for Citrus honey and ( $16.5 \pm 1.5$  g/100 g) protein for Acacia honey were observed. Sucrose, total sugar as well as macro and micro elements were also found in these honey types. Different formulations of honey were found significant to inhibit the growth of microorganisms: *Staphylococcus aureus*, *Escherichia coli*, *Candida albicans* and *Aspergillus niger* when compared to control group, which is an evidence that honey is a therapeutic agent being used since ancient time throughout the world <sup>[10]</sup>.

Deshpande and Kulkarni evaluated the *in vitro* antimicrobial activity of nine honey samples on *Staphylococcus aureus* obtained from wounds by using agar diffusion method. A total of 123 *Staphylococcus aureus* isolates along with ATCC Strains of *Staphylococcus aureus* were categorized as sensitive, multi drug resistant (MDR) and non-MDR strains. The results indicated that all the honey samples were found to be more effective for their antimicrobial activity, sensitive, non-MDR and ATCC strains of *S. aureus* <sup>[11]</sup>.

Koc et al. evaluated the antifungal activity of the honey bee products (honey, royal jelly Pollen and Propolis) against yeast strains of *Candida albicans*, *Candida glabrata*, *Candida krusei* and *Trichosporon* species by using broth micro dilution method. Fluconazole was used as antifungal control agent minimal inhibitory concentration ranges with respect to all isolates were 5-80% (v/v), 0.06-1 µg/mL, 0.002-0.25 µg/ml, 0.006-0.1 µg/mL and 0.02-96 µg/mL for honey jelly, pollen, propolis and fluconazole, respectively. The antifungal activities of each product decreased in this order: Propolis>pollen>royal jelly>>honey. This study demonstrated that honeybee products, particularly propolis, pollen, can help to control some fluconazole-resistant fungal strain <sup>[12]</sup>.

Jaganathathan et al. reported that honey is a rich source of phenolic substances (caffeic acid, Chrysin, Quercetin, Galangin, Acacetin, Apigenin, Kaempferol, Pinnobanksin and Pincembin) and other antioxidants (amino acids, proteins and ascorbic acid) were reported effective in the treatment of cancer <sup>[13]</sup>. Calman prepared a processed food from medical herbs and honey as in its effective component with brain cell activating effect <sup>[14]</sup>.

Quanguo prepared honey pills for treating lung carcinoma. The Chinese medical honeyed pill has significant effects of clearing away heat and toxic material, relieving asthma arresting hemorrhage, nourishing lung and can rapidly inhibit tumor growth improve immunity <sup>[15]</sup>.

Gao and Xiuzhen studied about the formulation of a capsule from pollen 35-45%, compound amino acids 15-20%, and honey 30-35% contains *Lycium barbarum* fruit powder and *Ganoderma lucidum* powder. The capsule containing honey and pollen may be taken for resisting fatigue and improving immunity, with good health-care effect <sup>[16]</sup>.

Chernev et al. presented four cases chronic and delayed wound healing. All patients were treated with wounds debridement, non-contact, low frequency ultrasound and topical application of honey as out or in patients in community based rehabilitation hospital with excellent results. All the four patients observed reduction in wound dimensions, these results concluded that combined therapy may reduce wound dimension and stimulate wound healing <sup>[17]</sup>. Iftikhar et al. studied the efficacy of honey in various rat models of wounds. Topical as well as oral treatment was applied to rats. The results indicate the improvement in area of epithelialization and wound contraction <sup>[18]</sup>.

Bradshaw and Claire compared the *in vitro* antimicrobial activity of different type of dressing against common wound pathogens *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*. No significant differences were observed between honey and silver <sup>[19]</sup>.

Reybroeck et al. determined the transfer of sulfamethazine from contaminated beeswax to honey by using a liquid Chromatographic tandem mass spectrometric method. Residues of Sulfonamides were found when performing residue control on beeswax intended for the fabrication of wax foundations. A migration test was performed to assess whether sulfonamide-containing bee wax could transfer to the contamination of honey. High concentration of sulfamethazine in honey is directly proportional to high concentration of sulfamethazine doped in the wax. The maximum transfer was 15.6, 56.9% and 29.5% of the initial amount spiked in the wax foundation. In another test the percentage of sulfamethazine migrating from medicated winter feed to beeswax in relation to the concentration in the syrup and the contact time was studied. The maximum transfer of sulfamethazine from medicated sucrose syrup to beeswax was 3.1% <sup>[20]</sup>.

Moloney et al. stated that the effective dose of radiation does not alter the properties of composition present before the sterilization <sup>[21]</sup>.

Vandeputte et al. described a method for sterilization of unheated raw honey by ozonization using an ozone generator. The

technique also relates to honey-based wound care preparation thus, wound care gel consists of ionized honey 75.3, PEG 3590 12, propylene glycol 12, Vitamin C 0.5, Vitamin E 0.05, Glucose oxidize 0.05 [22].

Sancho et al. determined the diastase and HMF content of 115 honey samples after 4, 16, 28 months of their extractions. Linear relations are observed between diastase number and the logarithm of time and between the logarithm of hydroxymethylfurfural (HMF) content and time for all honey samples. In these honey samples the effects of heat and storage for longer duration resulted the increase in HMF contents to a higher level, in some samples for freshness in the short-term. To determine the freshness date of honey samples were also observed. [23]. Baltrusatyte et al. reported that processing and storage system brought negative effect on antimicrobial activity of honey samples [24].

### CONCLUSION

Since ancient times remedial significance of honey has been acknowledged in the world's oldest medical literature. Now in modern era many studies shows that honey is the best medicine in this advancement age due to own antimicrobial, hemostatic, anti-inflammatory, analgesic and healing enhancing properties, Honey is re-establishment of natural product in modern medical practice in the world.

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