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## *Asl Khalis* (Honey) a multi-functional drug of unani system of medicine

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### Abstract

The use of *Asl Khalis* (Honey) in the treatment of external and internal ailments is much older than the history of medicine itself. *Asl Khalis* (Honey) as a natural product has clinched the attention of researchers as a complementary and alternative medicine. According to Unani Medicine, it is used as nutritive agent, as a natural food supplement and therapeutically has antibacterial, anti-inflammatory, detergent, deobstruent, lithotryptic and wound healing properties. *Asl Khalis* (Honey) consists of glucose, fructose, water, maltose, trisaccharide and other carbohydrates, sucrose, minerals, proteins, vitamins and enzymes. Through this paper, an effort is made to review the evidence based research in the usefulness of *Asl Khalis* (Honey).

**Keywords:** *Asl Khalis*, honey, unani, wound healing

### Introduction

*Asl Khalis* (Honey) is a high viscosity product of characteristic flavor and aroma, color and texture, produced by honey bees and derived from the nectar of flowers. *Asl Khalis* (Honey) is produced by several honey bees e.g. *Apis mellifera*, *Apis dorasta*, *Apis indica* etc. *Asl Khalis* (Honey) is used as medicine since a long time for a variety of ailments and it forms the basis of many preparations in Unani system of medicine, acting as preservative and nutritive agent. (Vohra & Khan 1979) [51]. Prophet Mohammad (PBUH) recognized *Asl Khalis* (Honey) for the treatment of diarrhoea and wound healing (Banerjee, *et al.* 2003) [6].



*Asl Khalis*

Honey consists of glucose, fructose, water, maltose, trisaccharide and other carbohydrates, sucrose, mineral, proteins, vitamins and enzymes, yeast and other heat-resistant micro-organisms and small amounts of organic acids. High level of tetracyclines, phenolic compounds and hydrogen peroxide in *Asl Khalis* give it antimicrobial properties. *Asl Khalis* gets sweetness from the monosaccharide fructose and glucose and has approximately the same relative sweetness as granulated sugar (97% of the sweetness of sucrose, a disaccharide) (Anonymous, 2008) [4]. *Asl Khalis* has attractive chemical properties for baking, and a distinctive flavor which leads some people to prefer it over sugar and other sweeteners (Anonymous, 2008) [4].

Most micro-organisms do not grow in *Asl Khalis* because of its low water activity of 0.6. (Prescott *et al.*, 1999) [38]. Major component of *Asl Khalis* have now been identified, however there are still a great many minor constituents that have not yet been characterized (Croft, 1987) [15].

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A main effect of bees collecting nectar to make Honey is pollination, which is crucial for flowering plants (Kearns, *et al.* 1997)<sup>[29]</sup>.

### Physical properties

*Asl Khalis* is a thick, syrupy liquid of a light yellowish or yellowish-brown color. It is translucent when fresh, but frequently becomes opaque and granular from crystallization of dextrose. It has a characteristic odor and a sweet, faintly acrid taste. *Asl Khalis* is levorotatory at 200 °C., and is slightly acid to litmus paper. Diluted with twice its weight of water, *Asl Khalis* is only moderately turbid, not stringy, and has a specific gravity of not less than 1.099 at 25 °C. It has a density of about 1.36 kg/liter (36% denser than water) (Hughes, 1926).

### Chemical composition

Natural honey contains about 200 substances, including amino acids, vitamins, minerals and enzymes, but it primarily contains sugar and water. Sugar accounts for 95–99% of honey dry matter. The principal carbohydrate constituents of honey are fructose (32.56 to 38.2%) and glucose (28.54 to 31.3 %), which represents 85–95% of total sugars that are readily absorbed in the gastrointestinal tract (Moundoi MA *et al.*, 2001; Ezz El-Arab AM *et al.*, 2006)<sup>[34, 17]</sup>.

*Asl Khalis* (Honey) contains trace amounts of several vitamins and minerals. Vitamins e.g. Thiamin, Riboflavin, Niacin, Pantothenic acid, Vitamin B-6, Vitamin B-12, Folate, Vitamin C, Vitamin A, Vitamin D, Vitamin E, Vitamin K and minerals e.g. Calcium, Copper, Iron, Magnesium, Manganese, Phosphorous, Potassium, Sodium, Zinc are found in *Asl Khalis*. (Hughes, 1926).

*Asl Khalis* (Honey) also contains tiny amounts of several compounds thought to function as antioxidants, including chrysin, pinobanksin, vitamin C, catalase, and pinocembrin. (Martos, *et al.* 2000; Gheldof, *et al.* 2002)<sup>[31, 20]</sup>.

### Medicinal properties of *Asl Khalis*

For about 4,000 years, *Asl Khalis* has been a popular folk remedy around the world for ailments ranging from diarrhea to inflammation of the eyelids. Ancient Unani physicians described it as an effective treatment for wounds, and modern studies have verified *Asl Khalis* superiority to the standard medical treatments for burns, skin ulcers, and wounds.

The Muslims Holy book, Qur'an mentions the benefits of *Asl Khalis* (Honey) -

"And thy Lord taught the bee to build its cells in hills, on trees and in (men's) habitations...there issues from within their bodies a drink of varying colours, wherein is healing for mankind. Verily in this is a Sign for those who give thought". (Qur'an and Translation of Qur'an)

There is an entire Surah in Qur'an called *al-Nahl* (the Bee). According to *Hadith*, Prophet Muhammad (PBUH) strongly recommends *Asl Khalis* (Honey) for healing purposes. (Bukhari).

The Prophet used to take an *Asl Khalis* (Honey) drink: a teaspoon of *Asl Khalis* mixed well with a cup of water in the early morning before eating anything. The recent medicine discovers that such drink activates the digestive system to work in a better way. Furthermore, *Asl Khalis* has been

shown to be far superior to conventional antibiotics in treating infections and without the negative side effects associated with antibiotic use. It is amazing that the bacteria-killing properties of *Asl Khalis* increases two-fold when diluted with water (Ghaleb, 2008)<sup>[18]</sup>.

### *Af'aa*l (Pharmacological actions)

- *Muhallil-e-Waram* (Anti-inflammatory)
- *Musakkim-e-Auja'a* (Pain killer)
- *Mughazzi* (Nutrient)
- *Jali* (Detergent)
- *Mufatteh Sudad* (Deobstruent)
- *Mufattit e Hisa't* (Lithotryptic)
- *Muqawwi e Mida* (Tonic for stomach)
- *Mushtahi* (Appetizer)
- *Muqawwi e Bah* (Aphrodisiac)
- *Dafe Taffun* (Antiseptic)
- *Hadim* (Digestive)
- *Munaffith e Balgham* (Expectorant)
- *Musaffi e Dam* (Blood purifier)
- *Mundamil-e-Qurooh* (Wounds Healer)

(Vohra & Khan, 1979; Kabeeruddin NA, Hussain, 1933; Ibn-ul-Qaaf, 1233-1286; Ibn Sina, 980-1037; Ghani, 1926)<sup>[51, 24, 25, 19]</sup>.

### Therapeutic uses

- *Istisqa* (Ascites)
- Oligouria
- *Laqwa* (Bell's palsy)
- *Falij* (Paraplegia)
- *Sual e Balghami* (Productive cough)
- Cataract
- Epiphora
- Otitis media
- *Waja al Uzn* (Earache)
- Qurooh (Wounds)
- Chloasma
- Ring worm
- *Waram e Lauzatain* (Tonsillitis)
- Dog bite
- *Yaraqan* (Jaundice)
- *Azm e Tihal* (Enlargement of spleen)
- *Khushunat e Halaq* (Sore throat)
- *Amraz e Ria* (Chest diseases)
- *Du'fal Bah* (sexual debility)
- *Hisat e Kuliya* (Renal calculi)
- *Deedan e Ama* (Intestinal worms)
- *Amraz e Qalb* (Heart diseases)
- *Juzam* (Leprosy).

(Vohra & Khan, 1979; Kabeeruddin NA, Hussain, 1933; Ibn-ul-Qaaf, 1233-1286; Ibn Sina, 980-1037; Ghani, 1926)<sup>[51, 24, 25, 19]</sup>.

If taken by a pregnant woman early in the morning, it causes gripping pain. This fact is sometimes utilized for pregnancy diagnosis (Vohra & Khan, 1979; Ghani, 1926)<sup>[51, 19]</sup>.

Flavonoids of *Asl Khalis* (Honey) have been reported to exhibit a wide range of biological activities, including antibacterial, antiviral, anti-inflammatory, antiallergic, and vasodilatory actions. In addition, flavonoids inhibit lipid peroxidation, platelet aggregation, capillary permeability and fragility, and the activity of enzyme systems including cyclo-oxygenase and lipoxygenase (Marots, *et al.* 2008).

*Asl Khalis* (Honey) is a suitable alternative for wound healing, burns and various skin conditions and potentially has a role within cancer care. In the cancer setting, *Asl Khalis* may be used for radiation-induced mucositis, radiotherapy-induced skin reactions, hand and foot skin reactions in chemotherapy patients and for oral cavity and external surgical wounds (Bardy, *et al.* 2008)<sup>[8]</sup>.

### Pharmacological studies

#### Antibacterial activity

- *Antibacterial properties* of *Asl Khalis* (Honey) are the result of the low water activity causing osmosis, hydrogen peroxide effect and high acidity (Wahdan, 1998)<sup>[52]</sup>.
- Community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) has now been described globally, as a clinically significant pathogen, particularly associated with skin and soft tissue infections. The study demonstrated that, *in vitro*, these natural products had an *antimicrobial activity* against the CA-MRSA organisms tested (Maeda, *et al.* 2008; Temaru, *et al.* 2007)<sup>[30, 46]</sup>.
- Mixture of *Asl Khalis*, olive oil, and beeswax was effective for treatment of diaper dermatitis, psoriasis, eczema, and skin fungal infection. The mixture has *antibacterial properties* (Al-Waili, *et al.* 2006)<sup>[3]</sup>.
- *Asl Khalis* (Honey) was evaluated for its *antimicrobial* potency both in its crude viscous state and diluted form against *Salmonella typhi*, *Shigella dysenteriae*, *Pseudomonas aeruginosa* and *Staphylococcus aureus* and crude *Asl Khalis* showed higher *antibacterial* potency on the test organisms (Omoya, *et al.* 2010)<sup>[36]</sup>.
- Another study indicated that the *Asl Khalis* in pure form (with out dilution), was effective against bacteria: *Pseudomonas aeruginosa*, *Escherichia coli* and *Staphylococcus aureus* using the disk diffusion technique. However, the disk diffusion method had negative effect on the fungus *Candida albicans* (Ansari & Alexander 2009)<sup>[5]</sup>.
- It is speculated that the amylase present in *Asl Khalis* hydrolyzed the starch chains to randomly produce dextrin and maltose and that this increased the osmotic effect of the media, which consequently increased the *antibacterial activity* (Boukrra, *et al.* 2008)<sup>[14]</sup>.
- *Tualang Asl Khalis* has a *bactericidal* as well as bacteriostatic effect. It is useful as a dressing, as it is easier to apply and is less sticky compared to Manuka Honey. However, for *Gram positive bacteria*, *tualang honey* is not as effective as usual care products such as silver-based dressing or medical grade *Asl Khalis* dressing (Nasir, *et al.* 2010)<sup>[35]</sup>.

#### Antioxidant activity

Antioxidants in *Asl Khalis* have even been implicated in reducing the damage done to the colon in colitis (Bilsel, 2002)<sup>[11]</sup>. Such claims are consistent with its use in many traditions of folk medicine (Molan, 1992)<sup>[33]</sup>. The study provided unequivocal evidence that, through the synergistic action of its antioxidants, *Asl Khalis* by reducing and removing ROS, may lower the risks and effects of acute and chronic free radical induced pathologies *in vivo* (Beretta, *et al.* 2007)<sup>[9]</sup>.

#### Anti-inflammatory activity

*Asl Khalis* has been shown to be an effective treatment for conjunctivitis in rats (Al-Waili, 2004)<sup>[2]</sup>. And having wound healing properties (Betts, 2008)<sup>[10]</sup>.

#### Immuno-modulatory activity

Effects of *Asl Khalis* have been related to the presence of an unidentified component that induces release of inflammatory cytokines from monocytic cells. This study was intended to further characterize the reported *in vitro* effects of *Asl Khalis*. It was observed that *in vitro* immuno-modulatory effects of *Asl Khalis* might solely be explained by the endotoxin content in the natural *Asl Khalis*. (Timm, *et al.* 2008)<sup>[47]</sup>.

#### Antifungal activity

Amylase present in *Asl Khalis* increases the osmotic effect in the media by increasing the amount of sugars and consequently increasing the antifungal activity (Boukrra, *et al.* 2007)<sup>[13]</sup>.

#### Antitussive activity

Honey may be a preferable treatment for the cough and sleep difficulty associated with childhood upper respiratory tract infection (Paul, *et al.* 2007)<sup>[37]</sup>.

#### Antiulcer activity

*Asl Khalis* has a protective action on stomach from ulceration caused by NSAID. It also shows the killing effect on *Helicobacter pylori*, the bacterium believed to be responsible for peptic ulcer (Kandil, *et al.* 1987)<sup>[28]</sup>.

#### Anticataract activity

*In vitro* synthetic flavonoids luteolin 4'-glucoside, luteolin 3'-7-diglucoside and orientin, significantly inhibited cataracts induced in ovine lenses incubated in 45% hypotonic HBS for 24 hrs. It may be considered as a preliminary evidence for the putative anti-cataract properties of stingless bee Honey. (Vit. *et al.* 2008)<sup>[50]</sup>.

#### Wound healing activity

- Honey acts mainly as a hyperosmolar medium and prevents bacterial growth. Because of its high viscosity, it forms a physical barrier and the presence of enzyme catalase gives honey an *antioxidant* property. Its high-nutrient content improves substrate supply in local environment promoting epithelialization and angiogenesis. These properties of honey make it an ideal and cost-effective dressing for burn patients (Bangroo, *et al.* 2005)<sup>[7]</sup>.
- Salad dressings incorporating honey provided protection against oxidation to a degree similar to that of EDTA, as determined by peroxide value and p-anisidine value (Rasmussen, *et al.* 2008)<sup>[40]</sup>.
- A study indicated markedly greater efficacy of Honey compared with alternative dressing treatments for superficial or partial thickness burns (Wijesinghe, *et al.* 2009)<sup>[53]</sup>. Using a medical-grade honey, eight species of problematic wound pathogens, including those with high levels of innate or acquired antibiotic resistance, were killed by 4.0–14.8% Honey, which is a concentration that can be maintained in the wound environment. The data indicate that honey is an effective topical antimicrobial agent that could help

reduce some of the current pressures that are promoting antibiotic resistance (Blair, *et al.* 2009)<sup>[12]</sup>.

- The study shows that antibacterial properties and additional beneficial effects of medical honey on wound healing should encourage other wound care professionals to use CE-certified Honey dressings with standardized antibacterial activity, as an alternative treatment approach in wounds of different natures (Simon, *et al.* 2009)<sup>[44]</sup>.
- Honey can be used in diabetic foot ulcers in conjunction with standard wound care principles (Eddy, *et al.* 2008)<sup>[16]</sup>. The studies support the proposition that there are clinical benefits from using honey in wound care (Robson, *et al.* 2009)<sup>[41]</sup>.

#### Anti-angiogenic property

Honey, when topically applied on intact corneas, surgically induced corneal abrasion and exotoxin induced keratitis, it showed anti-angiogenic and anti-inflammatory properties in surgically induced corneal abrasion and exotoxin induced keratitis. (Uwayda, *et al.* 2011)<sup>[49]</sup>.

#### Anti-proliferative property

A flavon present in honey called chrysin has showed *anti-proliferative* effects and it may be a potential compound for the prevention and treatment of prostate cancer. (Samarghandian, *et al.* 2011)<sup>[43]</sup>.

#### Hemostasis property

Honey has showed the inhibitory effect on platelet aggregation and blood coagulation, which provide first line data for modulatory role(s) of Honey on process of hemostasis (Ahmed, *et al.* 2011)<sup>[1]</sup>.

#### Adverse effects of *Asl Khalis*

No adverse effect of *Asl Khalis* has been reported till now. It sometimes contains spores of *Clostridia* which poses a small risk of wound botulism, but no such report has been published (Banerjee, *et al.* 2003)<sup>[6]</sup>. *Asl Khalis* intoxication, a kind of food poisoning, can be seen in the Black Sea region of Turkey and in various other parts of the world as well. In this study, 66 patients were hospitalized with a variety of symptoms including nausea, vomiting, salivation, dizziness, weakness, hypotension, bradycardia and syncope several hours after the ingestion of small amounts of *Asl Khalis*. All patients had hypotension, and majority had bradycardia. These features resolved completely in 24 hours with intravenous fluids and atropine, and none died. (Yilmaz, *et al.* 2006)<sup>[54]</sup>.

#### Conclusion

*Asl Khalis* is highly nutritional with promising properties of anti-oxidant, anti-inflammatory, anti-bacterial agent as well as cough reducing and wound healing characteristics. It is a valuable dietary supplement. *Asl Khalis* also improves the serum testosterone concentration, sperm count and fertility. The foremost concern in the medicinal application of *Asl Khalis* in modern medicine is variation in its composition and lack of clinical trials. In principle, it is suggested that other actions of *Asl Khalis* mentioned by Unani physicians in literature should be evaluated further by the researchers.

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