

Properties and uses of honey.

# Properties and uses of honey

- ▶ Honey is a sweet substance made by honey bees using nectar collected from flowers
- ▶ That is widely used for its treatment effect
- ▶ Honey is a medicine device for centuries to eat and drink (Kumar et al., 2010; Allen et al., 1991)
- ▶ Honey contains about 200 chemicals
- ▶ The quality and composition of honey depend upon the flowering plant from which nectar is collected
- ▶ Honey is composed of glucose and fructose but also contains fructo-oligosaccharides and many amino acids, minerals, and enzymes (White, 1979)

## Properties of honey:

- ▶ All naturally honey contains flavonoids, phenolic, ascorbic acid, tocopherols, catalase, superoxide, dismutase, Millard reaction products and peptides.
- ▶ These chemical work together and provide synergistic antioxidant effects (Alvarez et al., 2010 ; Al-Mamary at al., 2002).
- ▶ According to united department of agriculture (USDA) national nutrient database One tablespoon of honey contains
  - ❖ 64 calories
  - ❖ 1.73 gram of sugar
  - ❖ 0 gram of fiber , fat and protein

## Typical honey profile:

Substances in honey	Percentage %
Fructose	38.2
Glucose	31.3
Maltose	7.1
sucrose	1.3
water	17.2
High sugar	1.5
Other	3.2

## Average composition of honey:

Honey (nutritional value per 100 gram)

Component	Average (g)
Carbohydrate	82.4 g
Fructose	38.5 g
Glucose	31g
Sucrose	1g
Other sugar	11.7g
Dietary fiber	0.2g
Fat	0g
Protein	0.3g
water	17.1g

Component	Average (mg)
Riboflavin (vit . B2)	0.038
Niacin (vit . B3)	0.121
Pantothenic acid (vit . B5)	0.068
Pyridoxine (vit . B6)	0.024
Folate (vit. B9)	0.002
Vitamin C	0.5 g
Calcium	6
Iron	0.42
Magnesium	2
Phosphorus	4
Potassium	52
Sodium	4
Zinc	0.2

## Physical properties of natural honey:

- ▶ Honey qualities depend upon its composition and taste
- ▶ Freshly honey is a viscous liquid
- ▶ Viscosity of honey depends upon substances composition and particular water present in it
- ▶ Hygroscopicity is an properties of honey and describes the ability of honey to retain moisture from environment
- ▶ Honey have normally 18.8% water content
- ▶ The surface tension of honey varies with the origins of the honey and due to colloidal substances
- ▶ Color of honey differ from colorless to dark black (Olaitan et al., 2007)
- ▶ Color of honey varies with botanical origins , age and storage condition

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- ▶ Clarity of honey depend upon on the amount of suspended particle such as pollen
- ▶ If honey contains high contents of glucose and low water contents then crystallization of honey is faster



## Traditional uses of natural honey:

- ▶ Human use honey as a stone age painting since 8000 million year ago
- ▶ The ancient Egyptians, Assyrians, Chinese, Greek and Romans used honey for wounds and disease of the gut
- ▶ Traditionally honey give to those people have weak digestive system and use honey to reduce irritation and for cough
- ▶ Honey use for treatment of insomnia because it have hypnotic action

## Honey in Islamic medicine:

- ▶ In Islamic medicine honey consider a healthy drink
- ▶ Moreover Muslims prophet Mohammad (SA) recommended the use of honey for the treatment of Diarrhea
- ▶ Avicennae the great Iranian scientist recommended honey for the treatment of tuberculosis (Asadi et al., 2003).

# Medical uses of honey:

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. The shapes are primarily triangles and polygons, creating a modern, layered effect. The overall composition is clean and minimalist.

## Antioxidant properties of honey:

- ▶ Honey contains flavonoids and carotinoids
- ▶ High level of these chemical ensure antioxidant properties in honey
- ▶ This properties of honey act as anti depressant during high emotional, physically and intellectual stress(Jagannathan and Mandal, 2009).
- ▶ The antioxidant have effective against several disease like cancer inflammatory disorder, cardiovascular disease. Wounds healing, infection disease and aging (Khalil et al., 2010)
- ▶ Antioxidant and antibacterial properties help to improve the digestive system

## Insulin like action:

- ▶ Honey is a good source for diabetics control
- ▶ Sugar is unlikely to be confirmed due to an increase in sugar intake. However it is better than sugar cane product
- ▶ It was reported that in healthy individual honey consumption produced lower blood sugar reading than consumption of same quantity of sucrose (Shanbaught et al., 1990)
- ▶ The consumption of honey reduce glycemic an blood lipid in healthy person and in diabetic and hyper lipidemic individual (Cortes et al., 2011)
- ▶ Honey bee venom can be used as a therapeutic option to reduce blood glucose and lipid in diabetic rat

## Antibacterial properties of honey:

- ▶ Honey have excellent antibacterial activity (Dureja et al., 2013)
- ▶ Honey is effective against many bacterial species
- ▶ Alcohol extract from honey exhibit an inhibitory effect on the array of antibacterial species..
- ▶ Including aerobes and anaerobes, Gram positive and gram negative (Mohapatra et al., 2011)
- ▶ It is prove that methanol ethanol and ethyl acetate extract of honey exhibit in vitro antibacterial activity against *p. aeruginosa*( (Henriques et al., 2011)

## Anti inflammatory action and wounds healing properties of honey:

- ▶ Honey reduces the inflammatory reaction even without the presence of an infection
- ▶ It is observe that when honey is applied to a wound less redness less edema formation and
- ▶ less exudate oozing out occur and there is less awareness of pain (Molan, 2002)
- ▶ Honey demonstrated the fastest rate of healing as compared to other treatment and control (Gupta, 1992)
- ▶ Honey is used to repair wounds after surgery within few days wounds become dry
- ▶ In many tropical field hospitals where antibiotics and other medicine are scarce honey has been employed successful for a long time (kreel, 1996)

## Effect honey on the kidney and liver:

- ▶ Daily consumption of honey as rat of 2.5g /kg of body weight
- ▶ resulted in sufficient best against the hazard effect of food additives as indicated by the observed improvement in all biochemical parameters of kidney function (Hassan, 2007)
- ▶ Honey protects the liver against damage and it could be used as an effective hepatoprotection against APAP- induce liver damage (Mahesh et al., 2009)
- ▶ Honey improved the disrupted liver biochemical marker and alleviated the increase of lipid peroxidizing (Ibrahim et al., 2009)
- ▶ Honey and royal jelly could be used as dietary preventive natural products against sub chronic cisplatin- induce renal injury
- ▶ It was observed that honey effective in alleviating Ibumprofen toity in liver



## Effect of honey on immune system:

- ▶ Consumption of honey can exert several beneficial effects on the human immune response on its associated mechanism
- ▶ Honey promotes the multination of human peripheral blood B- and T- lymphocytes and the activation of neutrophils under condition of cell culture (Abuharfeil et al., 1999)
- ▶ In monocytes cell line culture honey has been shown to stimulate the release of inflammatory cytokines such as tumor necrosis factor-alpha interleukin-1B and interleukin-6 (tonks et al., 2003)

## Other benefits of honey:

### Nutritional benefits:

- ▶ Study investigate that honey have better physical performance and resistance to fatigue and also promotes higher mental efficiency
- ▶ Honey is best to reduce weakness improved non breast for newboin infant
- ▶ Improves calcium fixation in bones and curing anemia and anorexia may all attribute to some nutrional benefits or stimulation from eating honey

## Benefits to the digestive apparatus:

- ▶ Successful treatment of various gastrointestinal disorder by eating honey
- ▶ Honey is said improve food assimilation and to be used for chronic and infective intestinal problems such as constipation ulcer etc.

## ▶ Benefits to the respiratory system:

- ▶ Study investigate that in temperate climate
- ▶ honey is a well known remedy for colds an mouth, throat or bronchial irritation and infestation

## Benefits to eyes disorder:

- ▶ Study reported that if honey apply directly into the eyes that honey reduce and cures eye characters and various affliction of the cornea
- ▶ A study investigated and compared the antioxidant effect of honey and conventional treatment in alkali injury the eyes of New Zealand white rabbits (Bashkaran et al., 2011).

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