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## AN OVERVIEW ON HONEY IN MEDICINE

**Khyati Varshney\***; **Kirti Mishra\*\***

\*SOP,

Sanskriti University, Mathura, Uttar Pradesh, INDIA

Email id: khyati.smas@sanskriti.edu.in

\*\*SOP,

Sanskriti University, Mathura, Uttar Pradesh, INDIA

Email id: kirti.smas@sanskriti.edu.in

**DOI: 10.5958/2249-7307.2021.00059.1**

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### ABSTRACT

*Honey has been utilized for a long time. Honey has been utilized for its nutritive and medicinal properties since ancient times. For thousands of years, honey has been utilized as a sweetener and flavoring ingredient. Honey is a product that is produced all around the globe. The most essential elements in honey are monosaccharides, fructose, and glucose, which exist in the form of monosaccharides, fructose, and glucose. Honey is an antioxidant, anti-inflammatory, and antibacterial agent that aids wound healing and skin graft adhesion. Honey's antibacterial and antioxidant properties, as well as its impact on cough prevention, fertility, and wound healing, have all been scientifically verified. However, its use has been disputed, and it is not widely acknowledged in contemporary medicine. The goal of this study was to investigate and emphasize the importance of honey in contemporary medicine.*

**KEYWORDS:** *Benefits, Glycemic Index, Health, Honey, Nutrition.*

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### 1. INTRODUCTION

Honey is a natural material that has been used for medical purposes for a long time. It's claimed to have almost 200 distinct compounds in it. Honey is mostly fructose as well as glucose, but it also includes fructo-oligosaccharides, vitamins, minerals amino acids, as well as enzymes. The configuration of honey varies based on the plants that the bee eats. Flavonoids, superoxide dismutase (SOD), catalase (CAT), as well as superoxide dismutase. The majority of these chemicals work together to provide antioxidant protection[1][2].

Honey eating has a long and illustrious history among humans. It has been employed as a sweetening and flavoring ingredient in a variety of foods and drinks. Honey has been prized for its nutritional as well as medicinal properties since ancient times[3]. Honey is a product that is produced all over the globe. Honey output in the world is estimated to be about 1.200 millions tons per year. Honey is mostly produced in Argentina, Turkey, Mexico, China, Ukraine, as well as the United States. Carbohydrates, such as glucose, and disaccharides, monosaccharides, maltose, sucrose, isomaltose, maltulose, fructose, as well as turanose, are the greatest significant components in honey, and they are responsible for its sweetness. There are also oligosaccharides like androse and panose, as well as enzymes like oxidase peroxide, catalase, amylase, as well as acid phosphorylase in it. Trace vitamin B, Amino acids, Vitamin B6, minerals, Vitamin C, folic acid, as well as zinc, antioxidants iron, are also found in honey. Honey is a popular anti-inflammatory, anti-bacterial and anti-oxidant, substance. Figure 1 shows the richness of honey[4], [5].



**Figure 1: The above diagram shows richness of Honey[6].**

### *1.1 Honey Types:*

Honey comes in approximately 320 varieties, all of which come from distinct floral sources. The taste, color, and odor of honey are influenced by the liquid sources present in the flowers and plants that the honey bee visits. In terms of temperature, rainfall, and seasonal and climatic variations, many varieties of honey are similar. Depending on where the honey bees swarmed, the honey hue varied from light brown to dark brown.

### *1.2 Compounds of the Biological Bioactive:*

Vitamins “A, phenolics, flavonoids, Vitamin B1, Vitamin K, Vitamin E, Vitamin B2, Vitamin C, Vitamin B6, Niacin, Pan-thothenic acid, as well as fatty acids”, “cinnamic acid, hydroxybenzoic acids, pinocembrin, ocApigenin, acacetin, abscisic acid, as well as ferulic acid are also present.”

### *1.3 Antioxidant properties:*

The term "oxidative stress" refers to an imbalance among allowed radicals as well as antioxidant activities that protects against them. An antioxidant is a chemical that may prevent other molecules from oxidizing. Oxidations is a biological process that produces free radicals, which may damage cells, tissues, and eventually physiological functioning. To protect the body from permitted radicals, antioxidants like vitamin C stop chain responses[7]. The human's body maintains complex systems of overlapping anti-oxidants to keep the oxidative state in check. Antioxidant-rich foods have been proven to be beneficial to one's health. Honey is thought to contain powerful anti-oxidants, according to research. Honey's function is also influenced by its concentration and geographical origin. Honey's antioxidant capabilities protect against a variety of clinical illnesses, including coronary artery disease, inflammatory disorders, neurological deterioration, aging, and cancer. Honey has antioxidant properties due to an increase in phenolic compounds.

### *1.4 Antimicrobial activity:*

Honey's antimicrobial activity must be consistent and standardized in order for it to be used therapeutically in modern medicine. Floral species with antibacterial qualities must be identified by scientists in the pharmaceutical and biological areas. Honey's antimicrobial properties are due to its low pH as well as high osmolarity, which are combined over and over with the enzymatic formation of hydrogen peroxide. Because of its antibacterial characteristics, honey wound dressing is becoming increasingly used in modern medicine. Furthermore, some varieties of honey have

broad spectrums antibacterial effect in contradiction of antibiotic-resistant microorganisms.

### *1.5 Honey in Cough:*

Cough is a significant disease that affects everyone, and it is one of the most common complaints reported to almost all doctors. Cough is quite frequent in children and may be caused by a variety of things. Age, geography, environment, weather, and epidemiology all have an impact on the occurrence of etiology. Cough in children has a different etiology than cough in young adults. Children are more susceptible than adults to the negative repercussions. Because a child's immune system is still developing, he or she is more vulnerable to a number of infections that produce persistent or chronic coughing. Cough has recently piqued scientists' attention in pediatrics, and understanding how to control it is crucial for their future respiratory health's. Numerous drugs used to treat coughs in children have the potential to make them drowsy[8].

### *1.6 Honey in wound healing:*

The therapeutic potential of honey has already been shown in technical literature. Honey's antibacterial activity, capacity to keep wounds moist, and highere viscosity, which assistances to establish a defensive barrier against infection, are the main reasons for its healing effects. Honey has been discovered to have a favorable influence on wound healing and is supposed to enhance circulation as well as healing growths, among other things. When it comes to wound healing, especially burn wounds, honey has received a lot of attention in the scientific literature. Honey may be used to cure a number of wounds that haven't healed after being treated with other methods. Honey aids in the prevention of infection in wounds.

### *1.7 Honey and glycemic index:*

The impact of a high-carbohydrate diet on human health has been extensively debated, particularly in relation to how blood glucose levels are affected. The glycemic index is now widely used to emphasize the importance of carbohydrates (GI). Low and high blood glucose levels are produced by carbohydrates with the lowest and highest GI values, respectively. Unifloral honeys contain varying quantities of fructose and fructose as well as glucose ratios, as is widely known. Acacia and yellow box honey has more sugar and has a lower GI than honey from other sources. The GI hypothesis has the potential to predict carbohydrate function in health, as well as metabolic and endocrine illnesses. Honeys with a low glycemic index are more beneficial than those with a high glycemic index. Low-GI meals are good for metabolic disorders such as diabetes and coronary artery disease. Acacia honey, which has a low GI, provides physiological advantages and may be used by people with endocrine dysfunction. The use of honey in diabetic patients, on the other hand, has been a controversial issue.

### *1.8 Honey and fertility:*

Honey was formerly used as a fertility sacrifice by Egyptians. Furthermore, honey has traditionally been utilized in many cultures to boost male vitality. Infertility may be caused by a number of things, most of which can be treated. Due to its high concentration of calcium, vitamins, iron, other amino acids, minerals, as well as immune-enhancing properties, honey bee pollen has been shown to boost quality of the egg as well as overall fertility and fecundity in several studies. Impotence in men and infertility in women, including irregular ovulation, have been linked to honey. Honey combined with warm milk is claimed to assist infertile or sub-fertile men dramatically improve their sperm count.

Vitamin B, which is essential for testosterone production, is abundant in honey. There is a relationship between honey intake and testosterone levels, according to certain research. Honey's high content of nitric oxide, a molecule involved in vasodilation, has been proposed as a way to induce and improve erection in males suffering from impotence or dysfunctional erection. 100

grams of honey has been proven to raise nitric oxide levels in the blood by up to 50 percent. Honey enhances sperm quality in males and strengthens the ovaries as well as uterus in females, according to complementary and alternative medicine theories. According to the authors of a new research, adding honey to a cryoprotectant solution improves overall sperm quality. According to earlier studies, male rabbits given bee pollen had greater fertility and semen quality. Bee pollen-fed rabbits also acquired more weight and had a better survival rate. Another study found that applying bee honey as well as royal jelly to the vaginal region around the time of sexual contact enhanced fertility in couples who were having difficulty conceiving naturally.

#### *1.9 Honey as a prebiotic and food preservative:*

Listeria monocytogenes, Shigella, as well as Staph. Aureus have been shown to be inhibited by hydrogen peroxides as well as non-peroxide components like antioxidants, which aids in food preservation. Clostridium botulinum, on the other hand, may be found in honey in trace quantities. It has the potentials to be utilized as a natural sources of antioxidants in fruit and vegetable processing to minimize the harmful effects of polyphenol oxidase browning[9]. A prebiotic is a non digestible nutritional supplements that changes the intestinal microflora balance by encouraging the growth and activity of helpful bacteria while preventing the growth and activity of potentially harmful bacteria. Honey has been shown to be a good sweetener in fermented milk products that does not affect the development of common bacteria such as Strep. Lactobacillus acidophilus, thermophilus, Lactobacillus delbruekii, as well as Bifidobacterium bifidum, all of which are beneficial to the gastrointestinal system. Honey promoted and encouraged the development of bifidobacterium due to the presence of a variety of oligosaccharides.

#### *1.10 Possessions of phenolic compounds of the honey:*

With over 8000 distinct known structures, phenolic compounds are one of the greatest significant families of chemicals found in plants. Anticarcinogenic, anti-inflammatory, anti-atherogenic, anti-thrombotic, immunological regulating, and analgesic effects have been found for these substances, which also serve as antioxidants. Phenolic acids as well as flavonoids, which are regarded to be probable plant origin identifiers, are found in honey's phenolic components. Scavenging free radicals, metal ion chelation, hydrogen donation, singlet oxygen quenching, as well as serving as a substrate for radicals like superoxide and hydroxyl one are just a few of the ways phenolics fight free radicals.

#### *1.11 Cardiovascular Diseases:*

Ischemic heart disease is the leading reason of mortality as well as disability in the industrialized world, with the highest economic consequences. IHD may cause severe symptoms such as arrhythmias and myocardial infarction (MI). Ventricular arrhythmias like ventricular tachycardia as well as ventricular fibrillations are the greatest common causes of death after the cardiac surgery and MI. Drug therapy may be lifesaving in the treatment of such diseases. Anti-arrhythmic medicines, on the other hand, have been restricted due to their risks (such as fatal arrhythmias in certain individuals). As a result, there is a trend toward using medicines with fewer side effects as well as higher efficiencies. Natural honey has been utilized for therapeutic reasons since ancient times, although most prior research on cardiovascular illnesses were conducted in animals as well as mostly absorbed on honey's benefits in contradiction of cardiovascular risk factors like hyperlipidemia as well as free radical generations. Monophenolics, flavonoids, Vitamin C, as well as polyphenolics are all antioxidants found in honey.

Consumption of flavonoids has been connected to a lower risk of cardiovascular disease. Honey offers a broad spectrum of phenolic chemicals that have demonstrated to be useful in the treatment of cardiovascular disorders. In coronary heart disease, anti-ischemic, the antithrombotic, antioxidant, and vasorelaxant properties of phenolic compounds are predominantly antithrombotic,

anti-ischemic, anti-oxidant, as well as vasorelaxant. Flavonoids are expected to lower the risk of coronary heart disease by enhancing coronary vasodilation, reducing platelet coagulation capacity, and preventing LDL oxidation. In thirty eight overweight adults, the effects of natural honey on entire cholesterol, triacylglycerole, higher-density lipoprotein cholesterol, fasting blood glucose, C-reactive protein, as well as body weight were studied. Researchers found that eating 70.00 grams of natural honey for thirty days lowered entire cholesterol, triacylglyceride, as well as CRP levels Figure 2 depicts the advantages of honey.

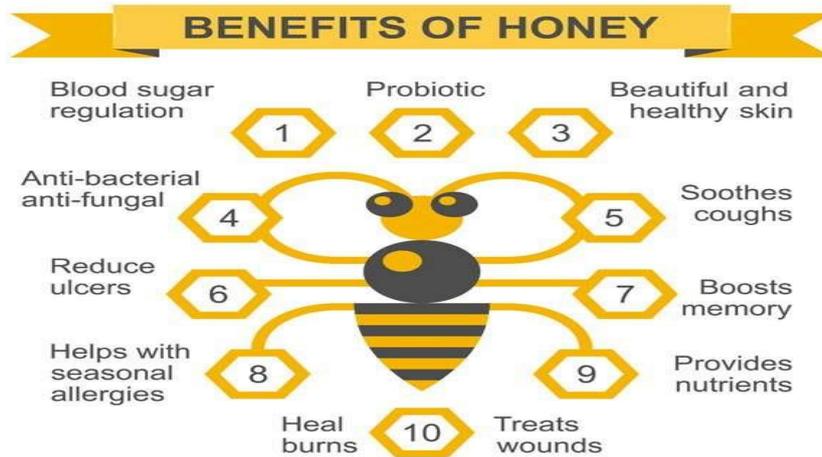


Figure 2: The above diagram shows the benefits of using honey[10].

## 2. DISCUSSION

Honey is made from floral nectar as well as the higher aero digestive tract of honey bees, which is dried and condensed within the hive. Honey's chemical makeup is complicated and changes depending on the plant source. Since ancient times, it has been utilized as both a food and a medication. According to Stone Age images, mankind have been using honey for nearly 8000 years. Honey has been shown to inhibit around 60 bacteria, as well as fungi and viruses. Honey's antioxidant capacity is significant in a variety of diseases and is attributed to phenolics, peptides, enzymes, organic acids, and Maillard reaction products, among other things. Honey has also been used to treat inflammatory, gastrointestinal, cardiovascular, and neoplastic conditions.

## 3. CONCLUSION

Honey is one of the greatest important natural products, having been utilized for a variety of medicinal purposes since antiquity. Honey, according to experts, is a unique effective therapy for a variety of disorders in addition to its important role in traditional medicine. Honey's antibacterial capabilities are perhaps its most well-known effect. Honey has also been found to inhibit yeast, fungus, leishmaniasis, and the spread of some viruses. Honey has been used topically to treat mucocutaneous injuries such vaginal sores, minor skin burns, as well as post-operative wounds with great effectiveness. Honey has also been used to treat GI, cardiovascular, inflammatory, as well as cancer-related problems. The antioxidant capacity of honey, which is linked to a variety of components such as phenolics, peptides, organic acids, enzymes, as well as Maillard reaction products, is critical to its health benefits. Honey is a nutrient-dense food with anti-inflammatory, anti-oxidant, antibacterial, cough, and wound-healing qualities. Honey also boosts sperm count, testosterone levels in the blood, and fertility. Clinical studies are scarce, and the content of honey varies greatly. These are the two key concerns with honey's usage in contemporary medicine for medical purposes. Honey is a great nutritional supplement in theory, and we endorse it. However, further research on the use of honey in people with metabolic disorders such as diabetes is needed.

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