

## A LITERARY REVIEW ON EFFECT OF HONEY ADDED TO HOT WATER: A GREAT CONCERN AS VIRUDDHA AAHAARA

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### ABSTRACT

Diet is considered to be vital for human body as it provides the basic nutrients, which are necessary to carry out the basic activities of digestion and metabolism. Viruddha Aahara or incompatible diet is very important issue discussed in ancient Ayurveda text. It is said to be the cause of many systemic disorders as per Ayurveda literature. Persons who consume Viruddha Aahara are prone to many lifestyle disorders. Ayurveda literature has described various types of Viruddha Ahara like desa, kala, agni, sanskaar viruddha etc. Honey added to hot water is mentioned as sanyoga and karma viruddha in ayurvedic texts. **Aim and Objectives-** To focus on fundamental concepts of honey added to hot water as Virudha Aahara from Brihat trayee and spread awareness of intake of Viruddha Aahara and help in prevention of lifestyle disorders. **Material and Method-** Ayurvedic texts and modern research work are used to evaluate the concept along with various related websites. **Observation and result-** Noticeable increase of HMF concentration is observed when honey is exposed to temperature of 90 degree centigrade where average concentration of 48.8 mg/kg was seen and much increase of 25.60% when exposed to 90 degree centigrade for 60 minutes. **Conclusion-** Higher HMF concentration has been reported to have negative effects on human health. Currently people have a misconception that, honey when added to hot water is a boon for health, which is totally unacceptable by Ayurveda as sanyoga and karma viruddha. Therefore, this will be one of the measures to prevent lifestyle disorders.

**Keywords:** Viruddha Aahar, HMF- Hydroxymethylfurfural., Fructose

### INTRODUCTION

Diet is considered to be vital for a human body as it provides the basic nutrients, which are necessary to carry out the basic activities of digestion and metabolism.

Ayurveda emphasizes on consuming right kind of diet which is healthy and nutritious. According to Ayurveda, there are positive and negative attributes of diet. Ayurveda, food is considered not only as mixture of the basic ingredients like proteins, vitamins, fats

and carbohydrates, but it directs to avoid those food articles which are having opposite attributes to be used at same time as per Ayurveda. Viruddha Anna or incompatible diet is very important issue discussed in ancient Ayurveda texts. [1] It is said to be the cause of many systemic disorders as per Ayurveda literature. Persons who consume Viruddha Ahara are prone to many disorders. Any food that can affect the balance of any of the three doshas of tridosha can be termed a Virudha ahara or incompatible food. [2] Ayurveda literature has described various types of Viruddha Ahara like desa, kala, agni, sanskaar viruddha etc. [3] Honey added to hot water is mentioned as sanyoga and karma viruddha in ayurvedic texts. [4] Honey is mainly composed of water (15-20%) and sugars (80-85%). HMF (5-Hydroxymethylfurfural) is a cyclic aldehyde produced by sugar degradation. HMF concentration is widely recognised as a parameter affecting honey freshness as it is typically absent or present in very small amount in fresh honey. According to Codex Alimentary Standard commission the maximum limit for HMF in honey is 40mg/kg. It ensures that the product has not undergone extensive heating during processing and is safe for consumption. Honey when heated HMF concentration increases. [5]

### **Aim and Objectives**

To study the fundamental concepts of Virudhaahara from Brihat trayee and spread awareness of intake of honey with hot water as Viruddha Aahara, this will be one of the measures to prevent lifestyle disorders.

### **Materials and Methods**

For this study only Ayurvedic texts are used to evaluate the concept. The text from Brihatrayee i.e. Charaka Samhita, Sushruta Samhita, Ashtang Sangraha, and Ashtang Hridaya and their respective commentaries in Sanskrit as well as Hindi which are easily available are evaluated. Also various related websites have been searched.

### **Literature review**

Incompatible food is also considered as Visha (Poison) or Gara. One who is habituated to consume incompatible food will decrease digestive power which in turn leads to Ama. And recurrent intake of this unhealthy food will develop Aamavisha (toxins) which

is a very critical condition. Aamavisha (Toxins) is an incurable disease because it is Aashukari (spreading quickly all over the body) and requires treatment procedures which are Viruddhopkrama (contradictory to each other). [6] Honey with hot water is considered as sanyoga and karmaviruddha. According to ayurvedic text honey is obtained from honey bees which are poisonous and also they collect nectar from various plants some of them are poisonous and so honey also becomes poisonous and when heated it becomes more toxic and may lead to death and also it should be taken in small amounts.

### **Research review**

Fresh honey is a supersaturated liquid, containing more sugar than water can typically dissolve at ambient temperatures. Honey is mainly composed of water (15-20%) and sugars (80-85%). A mixture of sugars and other carbohydrates, honey is mainly fructose (38%) and glucose (32%), with remaining sugars including maltose, sucrose and other complex carbohydrates. Honey also contains intricate mixture of nitrogenous compounds, lactone, proteins, antibiotic-rich inhibine, enzymes, phenol antioxidants, aroma compounds, amino and organic acids, gluconic acid, phenolic acids, flavonoids, minerals, vitamins, phytochemicals and 5-hydroxymethylfurfural (HMF). HMF and its derivatives may contribute to honey's toxicity. HMF is a cyclic aldehyde produced by sugar degradation through Maillard reaction during food processing or long storage of honey. The presence of simple sugars, acids and minerals in honey can further enhance production of HMF. [7] HMF is mainly formed due to dehydration of fructose. HMF concentration is widely recognized as parameter affecting honey freshness as it is typically absent or present in small amounts in fresh honey. Studies have reported that honey stored at low temperatures or fresh conditions has low or minimal HMF concentrations, while aged or honey stored at comparatively higher temperature has high HMF concentrations. Higher HMF concentration is indicative of poor storage and excess heating of honey. According to Codex Alimentarius Standard commission the maximum limit for HMF in honey is 40mg/kg which is considered safe for consumption. [8]

Higher HMF concentration has been reported to have negative effects on human health such as cytotoxicity toward mucous membranes, skin and upper respiratory tract; mutagenicity; chromosomal aberrations and carcinogenicity towards humans. HMF in low concentrations has antioxidative, anti-allergic, anti-inflammatory, anti-hypoxic, anti-sickling, anti-hyperuricemic effects. Data collected from previous research articles suggest that HMF concentration in honey increases when honey is exposed to a temperature of 40 degree centigrade by 11.38% for 15 to 30 minutes, 22.62% for 30 to 60 minutes and 32.36% for 60 minutes. [9] Similarly HMF in honey increases by 17.46% at interval of 15 to 30 minutes, 23.77% at interval of 30 to 60 minutes when exposed to temperature of 60 degree centigrade. Noticeable increase of HMF concentration is observed when honey is exposed to temperature of 90 degree centigrade where average concentration of 48.8 mg/kg was seen and much increase of 25.60% when exposed to 90 degree centigrade for 60 minutes. Thus when honey is exposed to higher temperature for longer time HMF concentration increases more than normal limit of 40mg/kg as accepted by Codex Alimentarius Standard commission making it unfit for consumption leading to hazardous effects on body and may lead to many modern day lifestyle disorders.

## DISCUSSION

Exposure of honey to high temperatures for a long period favours high content of HMF occurring as a result of dehydration of fructose. HMF in low concentrations has antioxidative, anti-allergic, anti-inflammatory, anti-hypoxic, anti-sickling, anti-hyperuricemic effects. Higher HMF concentration has been reported to have negative effects on human health such as cytotoxicity toward mucous membranes, skin and upper respiratory tract; mutagenicity; chromosomal aberrations and carcinogenicity towards humans. According to Codex Alimentarius Standard commission the maximum limit for HMF in honey is 40mg/kg which is considered safe for consumption. But HMF concentration in honey increases as it is exposed to higher temperatures at an average range of

48mg/kg when exposed to temperature of 90 degree centigrade and much more increase of 25.60% when exposed to 90 degree centigrade for 60 minutes. Thus when honey is exposed to higher temperature for longer time HMF concentration increases more than normal limit of 40mg/kg as accepted by Codex Alimentarius Standard commission making it unfit for consumption leading to hazardous effects on body and may lead to many modern day lifestyle disorders. Ayurvedic texts have already mentioned that honey when consumed along with hot water is sanyoga and karma viruddha. [10]

## CONCLUSION

Exposure of honey to higher temperatures leads to considerable increase in HMF concentration by fructose dehydration making it sanyoga and karmaviruddha and its long term use can lead to many lifestyle disorders. So to prevent lifestyle disorders one should not consume honey with hot water as well as honey should not be heated.

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**Source of Support: Nil**

**Conflict Of Interest: None Declared**

How to cite this URL: Vivek K. Bande & Mrunal Ashay Jamdade: A Literary Review On Effect Of Honey Added To Hot Water: A Great Concern As Viruddha Aahaar. International Ayurvedic Medical Journal {online} 2019 {cited October, 2019} Available from: [http://www.iamj.in/posts/images/upload/1916\\_1919.pdf](http://www.iamj.in/posts/images/upload/1916_1919.pdf)