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Review Article

**ROLE OF HYDROMEL [MAA-UL-ASL] IN FOSTERING  
RECOVERY FROM STROKE**Asia Sultana<sup>1</sup> and Javed<sup>2</sup><sup>1</sup>Professor and Chairperson, Department of Ilaj bit Tadbeer, Ajmal Khan Tibbiya College,  
Aligarh Muslim University, Aligarh.<sup>2</sup>Department of Moalajat, Ajmal Khan Tibbiya College, Aligarh Muslim University, Aligarh.**Abstract:**

*Unani system of medicine has some basic principles of therapeutics irrespective of etio-pathogenesis of diseases. One such principle is the concept of attenuated or slender diet in initial immediate phase of post stroke management in particular. Extensive literature is available in classical Unani texts regarding treatment and management of Stroke and related conditions. Dietary plan is the key factor in fostering recovery from stroke. Almost every classical scholar from Hippocrates to later, as well as contemporary scholars of Unani medicine advocated the use of Hydromel [honey water / known as Maa'ul Asl in unani] in the initial rehabilitative phase of stroke. There must be some great therapeutic potential in hydromel as it is recommended extensively and exclusively in a malady as challenging as stroke. Hydromel when evaluated with contemporary therapeutic markers and modern scientific parameters, was found to boost immunity along with a number of other actions which can be helpful in achieving sensory as well as motor functional enhancement and thereby alleviating acute attacks of stroke. This paper aims at reviewing literature of classical unani texts as well as contemporary pertinent literature in way to scientifically evaluate the use of Hydromel in acute cases of stroke and possibly suggest the possible mode of action of this remedy of merit used in Unani system of medicine for centuries.*

**Key Words:** Hydromel; Honey water; Stroke; Unani Medicine**Corresponding author:****Prof. [Dr.] Asia Sultana**

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## INTRODUCTION

Cerebrovascular disease is one of the most common causes of death worldwide. As a matter of fact it is the third most common cause of death in this modern developed world. Stroke is a syndrome characterized by the acute accent attack of a neurologic famine that persists for at least 24 h, reflects focal involvement of the central nervous system, and is the result of a commotion of the cerebral circulation [1]. Stroke is also considered as the most common clinical manifestation of diseases of the cerebral blood vessels [2].

The Global burden of Stroke figures 400-800 strokes per 100,000 out of these 5.7 million expiries every year and every year 16 million new acute strokes are diagnosed. [3] Grossly stroke accounts for about 10% of all deaths in most developed countries [2] Stroke is also one of the high contributing causes of mortality and morbidity world-wide [4]

In a report of The American Stroke Association [ASA] it is mentioned up to 90% of post stroke survivors report one or more disabilities. The incidence rises steeply with age, and in many developing countries, the incidence is rising because of the adoption of less healthy lifestyles [2, 4]

In almost every type of stroke, Hemiplegia [*Falij*] observed as the authoritative sign of all cerebrovascular diseases [5]. The term Hemiplegia is often used in generic to stroke, it refer the all-inclusive variety of motor problems that result from stroke. The location and extent of brain injury, the amount of collateral blood flow, and early acute care management determine the severity of neurological deficits in an individual patient. Impairment may resolve spontaneously as brain swelling subsides, generally within three weeks. Residual neurological impairments are those that persist longer than three weeks and may lead to permanent disability [6, 7, 8] All Unani scholars, from father of medicine, Hippocrates, to subsequent scholars and physicians of Unani Medicine have delineated *Falij* [hemiplegia] in detail. Ahmad Al Tabri in his treatise outlined that the severity and intensity of neurological disorders varies according to the involvement of active humour, nature of the morbid material, and site of accumulation in the brain. [9].

According to the knowledge and concept of Unani Medicine, the obstruction in the pathway of *Roohe Hassas* and *Muharrrik* preventing their entry into the organscauses *Falij*; Interruption of *Rooh* to

penetrate possibly occur either due to *Inqibaz* [constriction] in its passage or due to *Sudda* [obstruction]; which occurs due to abnormal collection of *Khilt* [humour]. Sometimes, the nerves arising from brain swell up after absorbing the abnormal and morbid *Ratubat* and get paralyzed, this morbid *Ratubat* in mostly is abnormal *Balgham* [phlegm] which descends from the *Batoone dimagh* [brain ventricles] into the *Mabadi* [origins] or branches of *Aasab* [Nerves]. [10,11,12,13]

### Management:

The acute management of stroke in contemporary medicine comprises use of Corticosteroids, hemodilutors, vasodilators and neuroprotective agents but it is cited that routine use of these agents should be avoided, since they may all have untoward consequences and none has been shown to improve patient outcomes [2].

### Management of Stroke in Unani system of medicine

In Unani system of medicine, ancient unani scholars have mentioned use of *Ma ul Asl* i.e. Honey water or Hydromel in management of acute attack of stroke. [10,11,12,13] followed by famous treatment of *Tanqia* and *Tadeel*. In this context almost all famous physicians of unani medicine had advocated the use of Honey water in just after few days of stroke.

The great physician of all time Ibn Sina also remember as Avicenna in west had mentioned in his treatise that a patient of stroke must be given Hydromel for at least three to four days otherwise should be given low calorie diet. [10] Hakim Sharif Khan and Hafiz Jaleel Ahmad in their respective masterpieces had mentioned that the patient of stroke must get be remain at bay from any type of diet and should be given only Hydromel for 14 days.[14, 15] In the same manner other physicians like Akbar Arzani, Hakim Ajmal Khan had also advocated that the patient of stroke must be only given Honey water just after stroke. [.11,16]

The great Arabic physician Raazi [Rhazes] had advocated the use of Hydromel for post stroke survivors along with easily digestible and nutritious diet. [17,18]

*Ma ul Asl* is prepared by mixing water and honey in a ratio of 4:1 by proportion. [19]

### COMPOSITION OF HONEY

Honey is the natural by product of honey bees made after sucking nectars from plants, so by default honey inherits plants properties, its color, aroma, flavor,

density, and physical and chemical properties, whilst atmospheric condition as well as processing also determines its composition and properties [20]

Natural honey makes up of about 200 substances, including amino acids, vitamins, minerals and enzymes, but it primarily contains sugar and water.[21] Honey is essentially contains concentrated solution of inverted sugars, and it too contains a very complex mixture of other saccharides, proteins, enzymes, amino acids, organic acids, polyphenols, and carotenoid like substances, maillard reaction products, vitamins and minerals [22,23 ] Sugar has about 95 to 97% of the dry weight of honey Fructose and glucose are the most prevailing sugars present in honey and are responsible for most of the physical and nutritional characteristics of honey Small amount of other carbohydrates are also found such as disaccharides, trisaccharides and oligosaccharides. [24, 25]

After sugar, water is quantitatively the other most important component of honey, it is important to have a count of water content of honey as only honeys with less than 18% water can be stored with little or no risk of fermentation. The water content of honey depends on Humidity and weather condition of bee hives The protein content of honey is roughly 0.5% of which are mainly enzymes and free amino acids. gluconic acid and Dextrin are also present. Approximately 18 essential and non-essential amino acids are present in honey. Proline is the primary amino acid, and lysine being the second most prevalent Elements like riboflavin, thiamin, niacin etc [vitamins], Cr, Ba, Ni etc [trace] and P, S, Ca etc [mineral] are also found these compounds on the basis of the multitude of known and unknown biological functions, play a key role in the biomedical activities associated with honey But it is believed that proteins, vitamins, minerals and trace compounds in honey depend on its botanical and geographical origin. [24,25]

Some ketones, aldehydes, acids, esters, terpenes are also found Phenolic acids *viz.* benzoic and cinnamic acids and flavonoids including flavanones, flavanols, are mainly thought to be responsible anti-oxidant property of honey. [22,23]

### Properties of Honey

#### Antimicrobial property of honey

Many study shows honey is a potent antimicrobial and used to treat wounds better than conventional treatment for example in a study conducted on 105 patients The median time to healing in the honey group was 100 days compared with 140 days in the

control group. The healing rate at 12 weeks was equal to 46.2% in the honey group compared with 34.0% in the conventional group. [26] Honey is found to both bacteriostatic and bactericidal properties, honey has been known to treat the wounds which are not responding to conventional antibiotics treatment [27,28,29,30,31]

#### Honey against *H. pylori*

In vitro studies of *H. pylori* isolates which cause gastritis have been shown to be inhibited by a 20% solution of honey without any synergistic effects of any antibiotics. [32]

It has been reported that honey dose not lead to development of antibiotic-resistant bacteria, and it may be used continuously [33].

#### Honey as a natural healer

In a randomised control trial consisting of 26 patients with postoperative wound infections. The group treated with honey had infection eradicated and achieved complete healing in less than half the time compared with the antiseptic-treated group. [34]

#### Anti-inflammatory properties of honey

In an experimental model of inflammatory bowel disease induced in 64 male rats, therapeutic roles of honey, and prednisolone was evaluated to find out if these drugs have any result on nitric oxide [NO] and free radical production After 7 days of study it was found that intrarectal honey administration is as effective as prednisolone treatment. [35] in other study it was described that honey reduces the activities of cyclooxygenase-1 and cyclooxygenase-2, also honey showed reducing effect on concentrations of prostaglandins such as PGE<sub>2</sub>, PGF<sub>2</sub> $\alpha$  and thromboxane B<sub>2</sub> in plasma of normal subjects, above reasons are thought to be behind the anti inflammatory property of honey [36]

#### Antioxidant & Immunomodulatory Activities

In a pilot study on 11 patients [7 men + 3 women] daily consumption of 1.2 g/kg body weight honey dissolved in 250 ml of water was given for a 2-week test period along with strict diet control. Results pointed that honey increased antioxidant agents. It also increased blood vitamin C concentration, beta-carotene and glutathione reductase. It increased the percentage of monocytes by 50%, and increased lymphocyte and eosinophil percentages slightly. Honey reduced serum immunoglobulin E and serum copper by along with increase in serum iron and ferritin levels. So it may be said that Apart from anti inflammatory activities, honey had also contain Antioxidant & immunomodulatory activities. [37] The flavonoides and phenolic acids, present in honey

acts synergistically, to aid the Antioxidant & Immunomodulatory Activities of honey. [38, 39]. Honey having antioxidant properties, favours vascular health by countering harmful effects free radicals. Dietary antioxidants are proved to be anti-atherosclerotic in animal models and human angiographic studies.

#### Cardio-protective & Neuro-protective Property of Honey

In a study on 55 obese patients were selected and randomly divided into two groups. A control group [17 patients] received 70 g of sucrose daily and experimental group [38 patients received 70 g of natural honey for one month. Results showed that honey induced a mild decrease in body weight and body fat. It also reduced total cholesterol, LDL-C, triacylglycerole, FBG, CRP, and increased HDL-C in all subjects. The authors concluded that consumption of natural honey reduces cardiovascular risk factors, particularly in subjects with elevated risk factors, without causing any increase in weight. [40]

#### Hypothetical Role of Hydromel in Acute Attacks of Stroke

Unani perspective of aetiology of diseases includes derangement of temperament. According to concept of Unani medicine, Stroke in most of the cases occurs due to blockage of nerves and vessels from thick and viscid *Balghami ratoobat*. [9,10] The temperament of this *Balghami ratoobat* is cold and moist. Stroke is weakened by morbid coldness in temperament. Hydromel by virtue of its Hot and moist temperament, acts as a Deobstruent either by dilating the vessels or dissolving this thick and viscid matter thus reviving the diseased brain tissue. [41]

Honey water when used in acute attacks of stroke, may benefit stroke victims in three possible mechanisms, discussed below:

1. After acute attack of stroke it is observed that the Tissue surrounding the core region of infarction is ischemic but reversibly dysfunctional and is called as the ischemic penumbra. The ischemic penumbra will ultimately infarct if no change in flow occurs, and therefore saving the ischemic penumbra is the goal of revascularization therapies just after stroke. [42] Honey has a number of antioxidants including flavonoids, polyphenolics, monophenolics, and Vitamin C. It is a known fact that regular flavonoid intake is associated with a reduced risk of cardiovascular diseases. Flavonoids diminishes the risk of CHD by improving coronary vasodilatation, preventing LDLs from oxidizing, decreasing the ability of platelets in the blood to clot viz antithrombotic activity, [43] So it is supposed that

honey water when used in acute attacks of stroke, gives number of flavonoids, these flavonoids can transfer blood brain barrier [44] and helps in revascularization this penumbra by improving vasodilatation, preventing LDLs from oxidizing, and also from imparting antithrombotic activity.

2. A number of phenolic compounds are also present in honey which has foretelling effect in the intervention of cardiovascular diseases. The protective effectuates of phenolic compounds are antithrombotic, anti-ischemic, anti-oxidant, and vasorelaxant, all are necessary parts in revascularization the above said penumbra thus helping in management of disease. [45].

3. Another way in which honey water is thought to be effective in stroke is by lowering Intra cranial pressure. Mannitol has been found effective in managing acute attack of stroke as it decreases the increased intracranial pressure thus reviving the brain tissue. The osmotic property of mannitol is thought to be reason behind its lowering ICP effects. [46] Honey in the same manner has osmotic property and may acts by lowering Intra cranial pressure thus helping the acute cases of stroke. [47]

#### CONCLUSION:

Classical literature as well as scientific studies favours the use of Hydromel as the safe and effective component of management plan due to its pleiotropic dietary benefits specifically related to cardiovascular system. Therefore this wholesome beverage can more rationally be recommended to facilitate the wellness and rehabilitative journey in post stroke cases.

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