



Review Article

ANALYTICAL STUDY OF AAHARAJA NIDANA OF MADHUMEHA IN CURRENT ERA

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Article info

Article History:

Received: 20-11-2022

Revised: 11-12-2022

Accepted: 22-12-2022

KEYWORDS:

Ayurveda,
Aaharaj nidan,
Change in
lifestyle,
Diabetes,
Madhumeha.

ABSTRACT

Madhumeha is a metabolic disorder in which a person passes honey-like (sweet) urine and is associated with the characteristic of urinary abnormality. The clinical conditions described in *Madhumeha* have much in common with diabetes mellitus which is recognized by hyperglycemia due to improper insulin secretion, insulin resistance, or both. Diabetes mellitus lowers the quality of life, greatly increases medical expenses and increases the disease-related death rate. Excess indulgence in curd, the meat of domestic animals, aquatic animals, fish, dairy products, newly harvested grains, and jaggery products in recent lifestyle are leading causes of *Madhumeha*. Therefore, it has become necessary that in the present era, we should have proper information regarding wholesome diet along with its nutritional value so that we could avoid impending disease and manage it accordingly. **Source:** Various classical texts like *Charaka Samhita*, *Astanga Hridaya*, *Shushruta Samhita*, *Madhava nidana*, and modern medical textbooks and online databases. **Conclusion-** Diet having *Madhur*, *Guru*, *Snigdha*, *Picchil*, and *Abhisyandi* properties produces *Kapha* which vitiates the *Tri-doshas* & *Kleda dusti* that causes the disease. **Aim:** To study and analyze the *Aharaja Nidana* of *Madhumeha* in the present era and manage it accordingly by adopting a diet which is suitable for the *Madhumeha Rogi*, **Objective:** To study the Glycemic index, carbohydrate and other nutritional value of the food articles that are usually taken on daily basis. **Material And Methods:** The *Bruhatrayi* & *Laghutrayi*, modern medical textbooks, journals and online database. **Results & Conclusion:** Ayurveda not only cures the disease but can also prevent it through the knowledge of *Aharaj* and *Viharaja nidana*. *Nidana parivarajana* helps to manage the disease.

INTRODUCTION

Among 20 types of *Prameha* described by various Acharyas, *Madhumeha* is a *Vataja Prameha*,^[1] presented with symptoms like *Kashaya* (astringent), *Madhura* (sweet), and pale & unctuous urine. In Ayurveda, there is a concept of *Ahara* (diet), *Nidra* (sleep), and *Bhramcharya* (celibacy) that plays a crucial role in maintaining a healthy life ^[2].

Diet is considered as the best medicine by *Acharya Kashyapa*^[3]. Consumption of heavy, unctuous, sour, and salty articles, eating new grains or freshly harvested grains, curd, the meat of domesticated and

aquatic animals, milk, jaggery, etc along with overindulgence in sedentary lifestyle, excess sleep, avoidance of exercise or thinking/worry and not doing *Shodhana* (purification) lead to excessive increase of *Kapha*, *Pitta dosha*, *Meda* and *Mamsa dhatu*. *Kapha* is said to be the initial factor in the composition of *Madhumeha*. All *Madhur* substances have the quality to increase the *Kapha* except *Madhu* (honey), old *Shali*, *Sashtik* (varieties of rice,) *Yava* (barley), and *Godhuma* (wheat)^[4]. Though *Madhumeha* is initially a *Kapha dosha* disorder, there is the involvement of all three *Doshas* presented with ten *Dushya* (*Abaddha Meda*, *Mansa*, *Rakta*, *Shukra*, *Oja*, *Ras*, *Majja*, *Lasika*, *Vasa*, *Ambu*). In later stages of the disease, there is the predominance of *Vata* and gradually develops towards the *Ashadya* disease.

Diabetes mellitus is a chronic, metabolic disorder characterized by elevated levels of blood glucose, present with general clinical features like

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<https://doi.org/10.47070/ayushdhara.v9i6.1102>

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Polyuria, Polyphagia, Polydipsia, weight loss, fatigue, and weakness which with the passage of time, leads to severe damage to the heart, blood vessels, eyes, kidneys, and nerves. The etiology of Diabetes mellitus is complicated and is related to irreversible risk factors like age, genetic factors, and quality and reversible factors like diet, physical activity, and smoking. There are two major types of diabetes mellitus- Diabetes mellitus type 1 & diabetes mellitus type 2. In Type 1 DM (juvenile diabetes or insulin-dependent diabetes) there is the destruction of insulin-secreting beta cells which leads to absolute insulin deficiency. Type 2 Diabetes mellitus occurs when the body becomes resistant to insulin or fails to make enough insulin. In the past three decades, the prevalence of Diabetes mellitus has risen drastically in countries of all income levels due to environmental and lifestyle changes resulting from industrialization and migration to urban areas from rural areas. About 422 million people worldwide have Diabetes mellitus, the majority living in low-and middle-income^[5]. In India, an estimate in 2019 showed that 77 million individuals had diabetes, which is expected to rise to over 134 million by 2045^[6]. High carbohydrate diets can cause a risk for Diabetes mellitus and cardiovascular disease (CVD). Complex carbohydrates such as brown rice, whole wheat bread, green leafy vegetables, legumes, and pulses are healthy. Conversely, highly polished rice or

refined wheat, sugar, glucose, processed foods such as cookies and pastries, fruit juice, sweetened beverages, fried potatoes, or French fries are unhealthy carbohydrates. The Glycemic index of carbohydrates can be taken as a good indicator to rule out blood glucose levels. Factors such as aging, obesity, lack of exercise, smoking and alcohol drinking, etc play an important role in the pathogenesis of Diabetes mellitus type 2 along with environmental factors and genetic predisposition.

MATERIAL AND METHODS

The *Bruhatrayi* & *Laghutrayi* were studied thoroughly to find out the role of various foods in the pathogenesis of *Madhumeha*. Special attention has been given to the *Nidana* of *Prameha* which are mentioned in *Charak Samhita*. Diabetes mellitus was studied in the modern medical books. Various journals were also reviewed for the selected topic.

Nidan (Etiology)

The manifestation of disease and its management can be done only if their causative factors (*Nidan*) are known as *Nidana Parivarjan* is said to be the first and foremost treatment in Ayurveda. The journey of a disease from the initial stage should be studied carefully for the proper management of the disease.

Table 1: Common Aharajanya Nidana (Dietary causes) of Prameha, given by various Acharya in Samhita

Aharajanya Nidana	Ch ⁽⁷⁾ .	Su ⁽⁸⁾	A.h ⁽⁹⁾	M.n ⁽¹⁰⁾
Navannasevana (new harvested grains)	+	+	+	
Navapanasevana (new drinks)	+	+		
Guda Vikara Atisevana (products of Jaggery)	+		+	+
Kaphavardhaka Ahara (Kapha producing regimens)	+		+	+
Atidadhisevana (Excessive use of curd)	+		+	+
Picchila Ahara			+	
Guru Ahara Sevana (heavy food consumption)			+	
Snigdha Dravya Sevana (oily food consumption)		+	+	
Ikshu Vikara Sevana (excessive sweat things)	+		+	
Ushna-Katu Rasa Sevana (hot & spicy food consumption)	+			
Tikta-Kashayarasa Sevana (bitter & astringent food consumption)	+			
Amla Lavanarasa Sevana (excessive sour & salty food consumption)	+		+	
Mutravardhaka Dravya (materials that increase urine)			+	
Medavardhaka Dravya (excessive fatty diets)		+	+	
Dravannapana (excessive liquids and fatty foods)				
Madhura-Dravya Sevana (sweet foods)		+	+	
Sheeta-Dravya Sevana (cold foods)		+	+	
Payansi-Sevana (excessive use of milk)	+		+	
Gramyamamsaatisevana (meat-soup of domestic animals)	+			+
Audakamamsaatisevana (meat-soup of aquatic animals)	+			+
Audakamamsaatisevana (meat-soup of Marshyanimals)	+			+

Navannasevana (Newly harvested grains)- *Dhanaya* or grains if fresh are *Madhura* (sweet), *Guru* (heavy), and aggravate *Kapha*, but when they become one year old they become *Laghu* (light), so they are easy to digest and do not aggravate *Kapha*.^[11]

Eg of *Anna*- Wheat (flour, *Maida*, *Daliya* etc), rice (boiled, flour etc), barley (flour), oats, millet etc.

Navapanasevana (New drinks)- fresh Alcohol preparations.

Guda Vikara Atisevana (Products of Jaggery)- White sugar, brown sugar, sugar cane juice, sweets, etc.

Payansi-Sevana (Excessive use of milk)- Milk, condensed milk, milk shakes, curd, butter, ghee,cheese, yogurt, sweets, etc.

Medavardhaka Dravya (Excessive fatty diets)- High-fat dairy foods (whole milk, butter, cheese,sour cream, ice cream), meat products, fish, eggs tropical oils (coconut oil, palm oil).

The causes described above are mainly *Madhur*, *Guru*, *Snigdha guna*, *Picchila*, *Abhisyandi* and *Kapha* producing Hence they vitiate the *Doshas* & cause *Kleda dushti*. Frequent, excessive and prolonged intake of these can cause *Madhumeha*. The properties of food items told by different *Acharyas* are mentioned below.

Table 2: Properties of food items mentioned in classical texts

<i>Cheenaka</i> ⁽¹²⁾	<i>Kashya, Madhur rasa, Shita virya</i>
<i>Yavaka</i> ⁽¹³⁾	<i>Trishna</i> (thirst) <i>Trimala</i> (<i>Tridosha- Vata, Pitta, Kapha</i>) producing
<i>Hayanaka</i> ⁽¹⁴⁾	<i>Laghu snigdha, Madhur rasa kashya anurasa, Madhur vipaka, Shita virya, Mutrala</i>
<i>Uddalak & Mukundaka</i> ⁽¹⁵⁾	<i>Laghu, Kashya Madhur rasa, Katu vipaka, Shita virya</i>
<i>Promodka</i> ⁽¹⁶⁾	<i>Madhura rasa, Madhura vipaka. Pacifies Vata & Pitta.</i>
<i>Nava-Harenu</i> ⁽¹⁷⁾	<i>Kashya, Madhura rasa, Shita, Katu vipaka. Pacifies Pitta & Kapha</i>
<i>Gramya Mamsa</i> ⁽¹⁸⁾	<i>Madhura rasa, Madhura vipaka, pacifies Vata producing Kapha & Pitta</i>
<i>AanupaMamsa</i> ⁽¹⁹⁾	<i>Madhura (sweet) Rasa, Snigdha, Guru (heavy). Picchila, Abhishyandi producing Kapha</i>
<i>Audaka Mamsa</i> ⁽²⁰⁾	<i>Madhura Rasa, Ushna Virya, Guru Snigdha. Producing Kapha & Pitta</i>
<i>Tila</i> ⁽²¹⁾	<i>Kashaya, Madhur, Tikata Rasa, Ushna Virya, Madhur Vipak, Snigdha, Guru</i>
<i>Krishara</i> ⁽²²⁾	<i>Guru, producing Pitta & Kapha, Durjara (Difficulty in digestion)</i>
<i>Vilepi</i> ⁽²³⁾	<i>Madhur Rasa, Laghu</i>
<i>Ikshu Vikara</i> ⁽²⁴⁾	<i>Madhura Rasa, Madhura Vipaka, Shita Virya Guru Snigdha</i>
<i>Dadhi</i> ⁽²⁵⁾	<i>Kashaya Anurasa, Amal Vipak, Ushna Virya, Guru Snigdha</i>

In the present era, we calculate the food's nutritional value and its effect on our body by assessing and measuring the Calories, carbohydrates, protein, fat, fiber value and Glycemic index of the food item. According to a study^[26] the average daily calorie consumption in India is below the recommended 2503 kcal/capita/day value. whole grains' calorie share is significantly higher than the EAT-Lancet recommendations while the calorie share of fruits, vegetables, legumes, meat, fish, and eggs is significantly lower. Only 6–8% of calories are provided by protein in the Indian diet compared to 29% in the reference diet. Processed food calories are consumed more than fruit calories in an average Indian household. The Glycemic index is a scale to classify foods comprising carbs or their potential to increase the blood glucose. The Glycemic index (GI) is also a good indicator of carbohydrate quality. According to ADA "Carbohydrate intake from vegetables, fruits, legumes, whole grains, and dietary products, with an emphasis on foods higher in fiber and lower in glycemic load, is preferred over other sources, especially those containing added sugar". Food items

having less GI value break down slower than the items having more GI value, that's why their excretion from the body takes more time so they are less likely to affect the blood glucose level. Consequently, food items with a higher GI cause rapid increase and fall in the blood glucose levels. With time these events play a major role in a person becoming insulin resistant.

Unhealthy saturated fats can increase cholesterol levels in the blood which increases the risk for type 2 Diabetes. Previously, it was believed that the blood glucose response of different food items is determined mainly by the amount of carbohydrates they contain. This consequently resulted in diet plans, in which the amount of food allowed, was based on their carbohydrate contents. However, the concept of the glycemic index (GI) which classifies the blood glucose-raising potential of carbohydrate foods, relative to glucose has shown that foods with similar carbohydrate contents did not usually have the same impact on blood glucose levels. The glycemic index (GI) is a relative ranking of carbohydrates in foods according to how they affect the blood glucose levels.

Carbohydrates with a Low GI value (55 or less) are more slowly digested, absorbed, and metabolized and cause a lower and slower rise in blood glucose and, therefore usually, insulin levels. Meats and fats don't

have a GI because they do not contain carbohydrates. There are three classifications for GI.

Low- 55

Moderate- 56 to 69

High - 70+(27)

Table 3: The Nutritional value and the Glycemic index of the food articles that we take on daily basis derived from multiple studies by different laboratories. (Per 100gm)

	Calories (Kcl)	Fat(g)	Protein(g)	Carbohydrate(g)	Fibres	G.I
Whole Wheat	1012.5	1.3	8.4	50.2	7.1	45.1±3 ⁽²⁸⁾
Maida	383	3.3	10	77	3.3	71±4 ⁽²⁹⁾
Wheat chapati	292	5	6.7	45	8.3	62±3 ⁽³⁰⁾
Muesli	366	3.9	10	68	8	57±2 ⁽³¹⁾
Barley	354	.38	9.02	73.5	17.3	28±2 ⁽³²⁾
Barnyard millet	378	4.2	11	72.9	8.5	41.7±2 ⁽³³⁾
Sweet corn	96	2.1	3.4	19	4.6	52±5 ⁽³⁴⁾
Rice noodles	109	.2	.91	24.9	1.8	53±7 ⁽³⁵⁾
Cornflakes	357	.4	8	84	3.3	81±6 ⁽³⁶⁾
Rice porridge	113	2	3.6	19.1	1.6	78±9 ⁽³⁷⁾
Millet porridge	180	5	11	27	3.5	67±5 ⁽³⁸⁾
Daliya	360	2	14	73	5.5	41±4 ⁽³⁹⁾
White Rice (boiled)	139	2.1	3.2	25.22	0.7	73±4 ⁽⁴⁰⁾
Brown rice (boiled)	112	7.5	4.43	53.2	3.5	68±4 ⁽⁴¹⁾
Tila	587	50	18	10	11.2	35±3 ⁽⁴²⁾
Jaggery	383	.1	.09	98.96	0	84.1 ⁽⁴³⁾
Apple Raw	52	.2	.3	14	4	36±2 ⁽⁴⁴⁾
Orange raw	47	.2	1.2	12.8	2.8	43±3 ⁽⁴⁵⁾
Banana raw	110	.3	1.1	23	3	51±3 ⁽⁴⁶⁾
Mango raw	60	.2	.8	15	2.6	51±5 ⁽⁴⁷⁾
Dates raw	282	9	5.1	75	8	42±4 ⁽⁴⁸⁾
Watermelon raw	30	.2	.6	7.6	0.4	76±4 ⁽⁴⁹⁾
Apple juice	46	.1	.1	11	.2	41±2 ⁽⁵⁰⁾
Orange juice	45	.2	.7	10	.2	50±2 ⁽⁵¹⁾
Potato boiled	87	.2	1.9	23.2	1.8	78±4 ⁽⁵²⁾
Milk full fat	60	1.9	3.3	4.7	-	39±3 ⁽⁵³⁾
Curd	61	3.3	3.5	4.7	0	14±3 ⁽⁵⁴⁾
Honey	288	0	.3	76.4	.1	61±3 ⁽⁵⁵⁾

Diets based on carbohydrate food that are more rapidly digested, absorbed, and metabolized (i.e., high glycemic index diets) have been associated with an increased risk of diabetes mellitus. Intervention studies following a low glycemic index diet, have shown improvement in insulin sensitivity and HbA1c in people with diabetes mellitus. According to ADA "Carbohydrate intake from vegetables, fruits, legumes, whole grains, and dairy products, with an emphasis on foods higher in fiber and lower in glycemic load, is preferred over other sources, especially those containing added sugar". Food items such as Barley, Daliya, wheat flour, tila, apple, orange, etc are good for

health as they have low G.I, low fat value, high fiber value, and a moderate amount of protein and calories.

In Ayurveda, important factors such as *Bal, Vaya, Kala, Agni, Prakriti desha* are considered before advising the diet as these are different for every individual, so there is different management for every patient. However glycemic response applies to the general population for the prevention of diabetes mellitus. Acharya Shushrta has advised the following diet for a diabetic patient such as *Shyamaka* (barnyard millet), *Navara* (rice), *Amla* (Indian gooseberry), *Kapitha* (wood apple), *Tinduk* (gaub persimmon), and

Asmantak (mock bodh tree), as they have *Laghu* (light), *Ruksha*, (dry), *Kashyaa* (astringent), properties Also have low glycemic index value. According to Acharya Charak following diet should be given to a diabetic patient.⁽⁵⁶⁾

1- *Manthas* (flour of different types of corn mixed with water), barley powder, various barley preparations such as cooked barley without adding any unctuous articles, *Saktu* (roasted corn flour), meat soup of gallinaceous and pecker birds and animals inhabiting arid land.

2- Old *Shali* rice cooked and mixed with the soup of *Mudga* (moonga), bitter vegetables, oil of *Danti* (red physic nut), *Ingudi* (dessert date) and *Sarshapa* (mustard). *Kapha* dominant *Prameha* can be caused after it (*Kapha*) vitiates *Mamsa* and *Kleda* of body located in *Basti* (bladder & urinary system)

- *Pitta* dominant *Prameha* can be caused when *Pitta* is aggravated by hot *Pittaj nidana*.
- *Vata* dominant *Prameha* can be caused when *Pitta* and *Kapha* are in diminished state and aggravated *Vata* draws tissue elements – *Ojas majja* and *Lasika* into the urinary system.

DISCUSSION

The body is formed from food and diseases also originate from food. All unwholesome food items are not equally harmful. *Samyoga* or combination (eg: *Kadanna* and ghee both are heavy but after cooking together becomes light in nature^[57]), *Samskar* or preparation (eg: boiled rice is light and easily digestible but poha made of same rice is heavy for digestion^[58].) and *Pramana* (amount), also plays an important role in the assimilation of food in our body. Nutrition therapy is the first line of treatment for the prevention and management of diabetes mellitus. previously diet advice was focused only on carbohydrate quantification but now it is clear that the amount and type of carbohydrate are important to read an individual's glycemic response after a meal.

Glycemic response applies to the general population for the prevention of diabetes mellitus. It is important to make a diet plan that allowed the personal preference and lifestyle to achieve goals for blood glucose, cholesterol, triglycerides level, and weight management.

CONCLUSION

Ayurveda not only cures the disease but can also prevent it through the knowledge of *Aharaj* and *Viharaja nidana*. *Nidana parivarajana* helps to manage the disease. Diet plays an important role in management of *Madhumeha* or diabetes mellitus. When we are advising diet to our patient, we must

consider Ayurvedic properties of food along with the total amount of carbohydrate and Glycemic index.

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Cite this article as:

Divya Pathak, Naresh Itani, Komal Keshwa, Surendra Kumar Sharma, Manita Ahlawat. Analytical Study of Aaharaja Nidana of Madhumeha in Current Era. *AYUSHDHARA*, 2022;9(6):94-99.

<https://doi.org/10.47070/ayushdhara.v9i6.1102>

Source of support: Nil, Conflict of interest: None Declared

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