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CLINICAL AND DIAGNOSTIC STUDY OF MADHUMEHA WITH SPECIAL REFERENCE TO DIABETES MELLITUS: AN INTEGRATIVE REVIEW

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ABSTRACT

Ayurveda, the traditional system of medicine practiced in India for thousands of years, emphasizes the preservation of health through preventive and promotive measures, including *Dinacharya* (daily regimen), *Ritucharya* (seasonal regimen), *Sadvritta* (ethical conduct), *Achara Rasayana* (behavioral rejuvenation), and a balanced diet and lifestyle. The declining adherence to these principles has contributed to a growing prevalence of lifestyle disorders, among which Diabetes Mellitus has emerged as a major global health concern. Type 2 Diabetes Mellitus accounts for nearly 90–95% of all diabetes cases and represents a significant cause of morbidity and mortality worldwide, with India bearing one of the highest disease burdens. In Ayurveda, Diabetes Mellitus is commonly correlated with *Madhumeha*, a subtype of *Prameha*. The term *Madhumeha* literally denotes the passage of urine resembling honey in its sweetness and characteristics. Classical Ayurvedic texts describe it as an advanced stage of *Prameha*, resulting from the progressive vitiation of *Doshas*, *Dushyas*, and *Mutravaha Srotas*. Clinically, *Madhumeha* shares several similarities with Diabetes Mellitus, including excessive urination (*Prabhuta Mutrata*), increased thirst (*Pipasa*), excessive appetite (*Kshudha*), fatigue, weight loss, and long-term systemic complications.

This review aims to critically evaluate the clinical manifestations and diagnostic approaches of *Madhumeha* in relation to Diabetes Mellitus by integrating classical Ayurvedic concepts

with contemporary medical knowledge. The article highlights the similarities in etiology, pathogenesis, clinical presentation, diagnostic criteria, and disease progression between the two conditions. An integrative understanding of Ayurvedic and modern diagnostic principles may facilitate early diagnosis, individualized management, and improved prevention of diabetes-related complications.

INTRODUCTION

Madhumeha is one of the twenty types of *Prameha* described in Ayurveda and is classified under Vataja Prameha by Acharya Charaka, Sushruta, and Vagbhata. It is considered a chronic metabolic disorder characterized by excessive and abnormal urination associated with the depletion of body tissues (*Dhatukshaya*) and *Ojas*. Classical Ayurvedic literature describes *Madhumeha* as either an independent disease or the advanced stage of untreated *Prameha*, in which the aggravated *Doshas*, particularly *Vata*, predominate.

The term *Madhumeha* is derived from two Sanskrit words: Madhu (honey) and Meha (excessive urination). According to *Vyadhi Shabda Sindhu*, *"Madhu iva madhuram mehati iti Madhumeha"*, meaning the patient passes urine that resembles honey in sweetness and other characteristics.[1] The classical texts also describe the body and urine of affected individuals as possessing sweetness due to the involvement of *Ojas*.

Diabetes Mellitus (DM) is a group of metabolic disorders characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both. Chronic hyperglycemia leads to disturbances in carbohydrate, fat, and protein metabolism and is associated with long-term damage to various organs, including the eyes, kidneys, nerves, heart, and blood vessels.[2]

According to the American Diabetes Association (ADA), Diabetes Mellitus is classified into the following categories:

1. Type 1 Diabetes Mellitus: Accounts for approximately 5–10% of all diabetes cases and results from autoimmune or idiopathic destruction of pancreatic β-cells, leading to absolute insulin deficiency.
2. Type 2 Diabetes Mellitus: The most common form, accounting for nearly 90–95% of cases, characterized by insulin resistance with relative insulin deficiency.
3. Other Specific Types: Diabetes resulting from genetic defects, pancreatic diseases, endocrinopathies, drug-induced causes, infections, or other identifiable etiologies.

4. Gestational Diabetes Mellitus (GDM): Glucose intolerance first recognized during pregnancy.

Classification of Madhumeha

According to Ayurveda, *Prameha* is classified into twenty types based on the predominance of the three *Doshas*:

- Kaphaja Prameha – 10 types
- Pittaja Prameha – 6 types
- Vataja Prameha – 4 types

Madhumeha is included under Vataja Prameha and is regarded as the most severe form due to its chronicity, tissue depletion, and poor prognosis.[3]

Nirukti (1)(Etymology)

The word *Madhumeha* is composed of:

- Madhu – Honey or sweetness
- Meha – Excessive passage of urine

Thus, ***"Madhu iva madhuram mehati iti Madhumeha"*** denotes a condition in which the urine is sweet like honey and passed in excessive quantity.

Nidana(1) (Etiological Factors)

Ayurveda classifies the causative factors of *Madhumeha* into two broad categories:

1. Santarpanajanya Nidana (Overnutrition-related)

These factors predominantly aggravate *Kapha* and *Meda* and include:

- Excessive intake of sweet, unctuous, heavy, and calorie-rich foods
- Frequent consumption of curd, milk, jaggery, freshly harvested grains, and sugarcane products
- Sedentary lifestyle
- Lack of physical exercise
- Excessive sleep, especially daytime sleep (*Divaswapna*)
- Psychological stress and overeating

Classical reference

"Āsyasukhaṃ Svapnasukhaṃ Dadhīni Grāmyaudakānūparasāḥ Payāṃsi | Navaannapānaṃ Guḍavaikṛtaṃ ca Pramehahetuḥ Kaphakṛcca Sarvam ||"

Charaka Samhita, Chikitsa Sthana, Chapter 6 /4(Prameha Chikitsa Adhyaya).

2. Apatarpanajanya Nidana (Undernutrition-related)

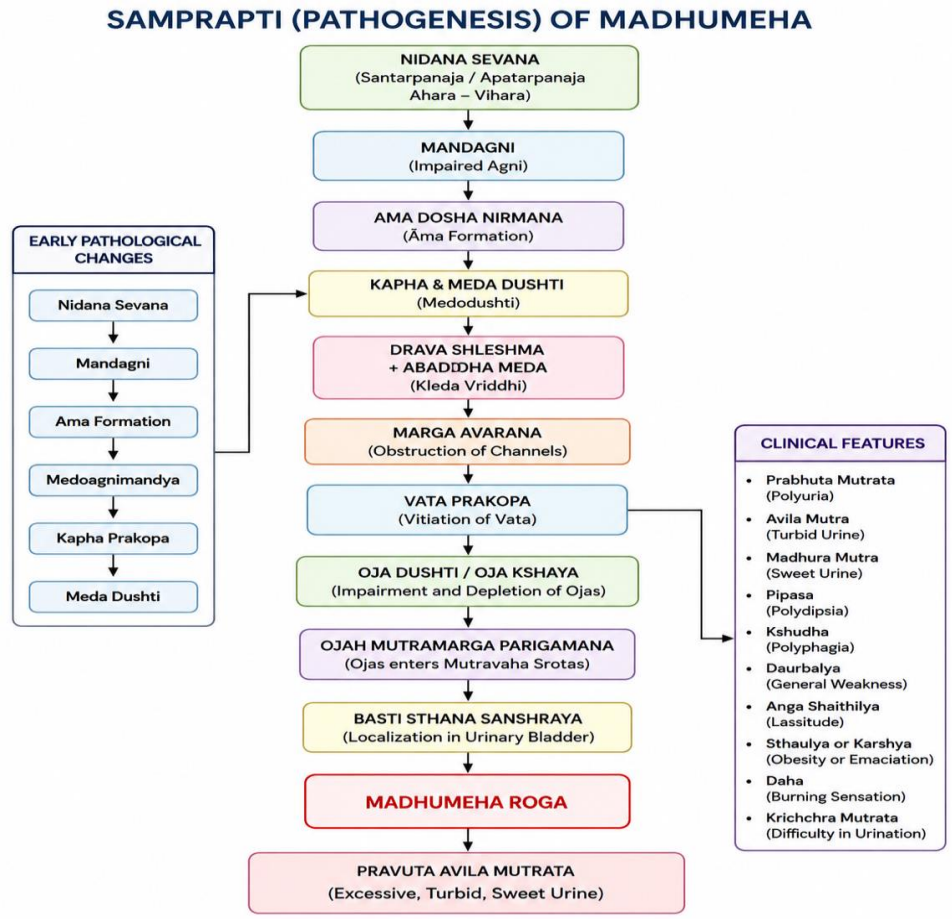
This type mainly results from excessive depletion of body tissues and aggravation of *Vata*. It is commonly associated with:

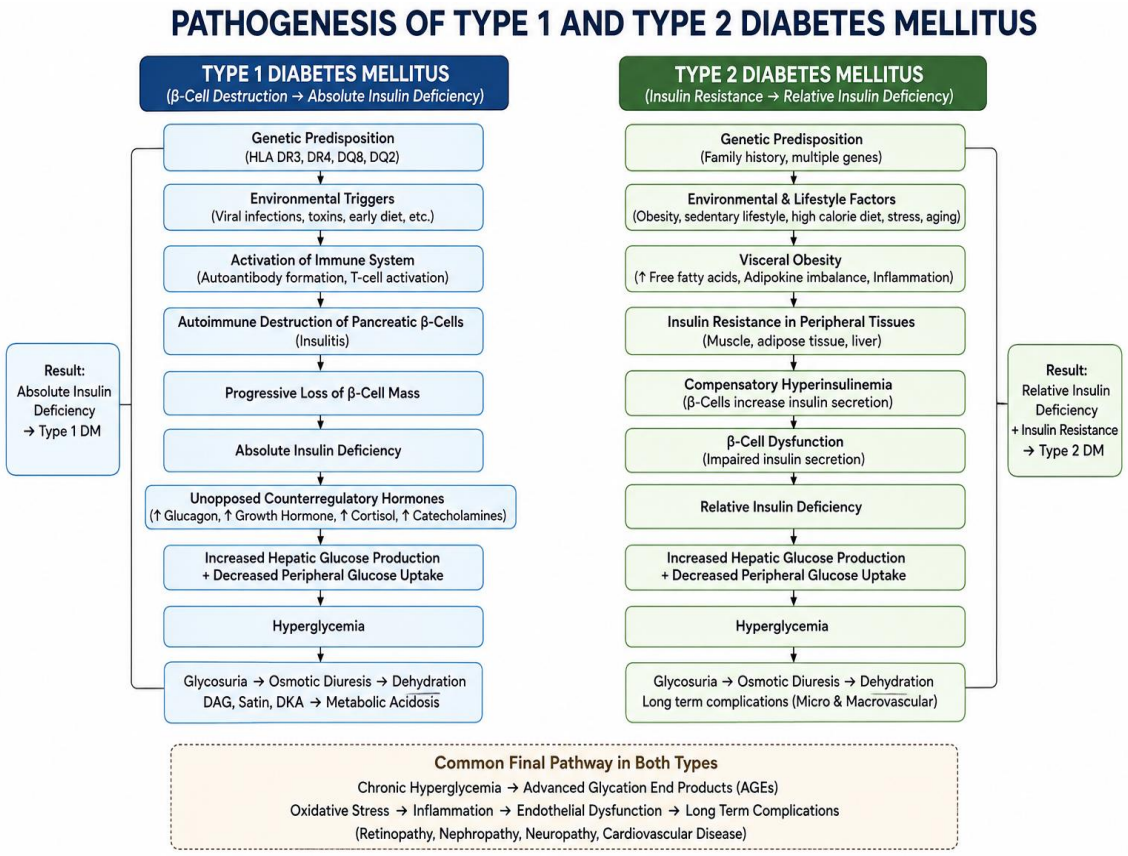
- Excessive fasting
- Malnutrition
- Excessive physical exertion
- Chronic debilitating diseases
- Tissue depletion (*Dhatukshaya*)

Synonyms

Classical Ayurvedic texts describe several synonyms of *Madhumeha*, including:

- Madhumeha
- Kshaudrameha
- Ojomeha[1,3]





[8,10]

Purvarupa(1) (Prodromal Features of Madhumeha)

The *Purvarupa* (prodromal stage) of *Madhumeha* represents the early clinical manifestations that appear before the disease becomes fully established. Recognition of these warning signs facilitates early diagnosis and timely intervention. Classical Ayurvedic texts describe the following prodromal features:

- Matting or roughness of hair (*Kesha Jatilata*)
- Sweet taste in the mouth (*Mukha Madhurya*)
- Burning sensation and numbness of the palms and soles (*Karapada Daha* and *Suptata*)
- Dryness of the mouth, palate, and throat (*Mukha–Talu–Kantha Shosha*)
- Excessive thirst (*Pipasa Adhikya*)
- Lethargy and easy fatigability (*Alasya*)
- Excessive accumulation of secretions over the eyes, ears, and teeth (*Netra–Karna–Danta Mala Adhikya*)
- Excessive growth of hair and nails (*Kesha–Nakha Vriddhi*)
- Generalized numbness of the body (*Sarvanga Shunyata*)
- Attraction of ants towards the body or urine due to sweetness (*Pipilikabhighata*)

- Excessive preference for sleeping, resting, and prolonged sitting (*Shayya–Asana–Swapna Sukha Rati*)
- Heaviness of the body (*Ghanangata*)
- Oily or sticky texture of the skin (*Deha Chikkanata*)[4]

Rupa (1,2)(Clinical Features of Madhumeha)

The *Rupa* of *Madhumeha* described in the Ayurvedic classics include Prabhuta Mutrata, Avila Mutrata, Mutrabarambarata, Mukha Madhurya, Shareera Madhurya, Kashaya–Madhura–Ruksha Mutra, Pandu Varna Mutra, Trishna Adhikya, Kshudha Adhikya, Shareera Gaurava, Shareera Jadyata, Vibandha, Akasmat Mutra Nirgamana, and Daurbalya. These clinical manifestations occur as a result of the vitiation of Dosha, Dushya, Agni, Ojas, and Mutravaha Srotas, leading to the development and progression of *Madhumeha.*[4]

These clinical manifestations closely resemble those observed in Diabetes Mellitus, particularly the classical triad of polyuria, polydipsia, and polyphagia, along with fatigue, weakness, and metabolic disturbances, thereby supporting the clinical correlation between *Madhumeha* and Diabetes Mellitus.[5,8]

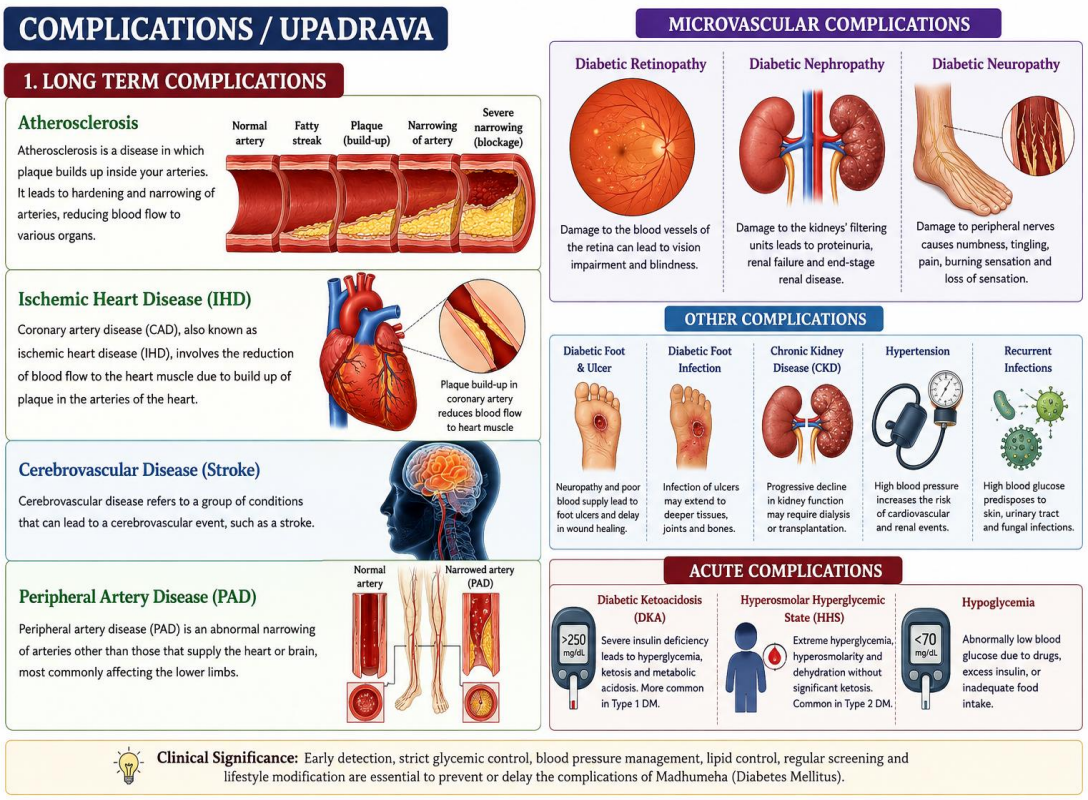
Blood Glucose Levels in Normal, Prediabetic, and Diabetic Individuals

Parameter	Normal	Prediabetes	Diabetes Mellitus
Fasting Plasma Glucose (FPG)	<100 mg/dL	100–125 mg/dL	≥126 mg/dL
2-hour Plasma Glucose (OGTT/PPBG)	<140 mg/dL	140–199 mg/dL	≥200 mg/dL
Random Plasma Glucose (with symptoms)	—	—	≥200 mg/dL
HbA1c	<5.7%	5.7–6.4%	≥6.5%

Note: The diagnosis of diabetes should be confirmed by repeat testing in asymptomatic individuals unless there is unequivocal hyperglycemia with classical symptoms.

DEFERENTIAL DIAGNOSIS (D/D)(1)

Madhumeha/Ekshubalikarasameha/Sheetameha/Raktapitta Haridravarnam rudhiram cha mutrabina pramehasya hi purvarupaihyo mutrayettam na badet prameham rakttasya pittasya hi sa prakopakah (c. chi.6/54) [5-8,9]



CONCLUSION

Madhumeha, one of the Vataja Prameha described in Ayurveda, closely resembles Diabetes Mellitus in terms of its etiology, pathogenesis, clinical manifestations, disease progression, and complications. Ayurvedic classics provide a comprehensive understanding of the disease through concepts such as Nidana, Purvarupa, Rupa, Samprapti, and Upadrava, emphasizing early recognition and preventive measures.[1] The classical principles of Nidana Parivarjana, appropriate dietary regulation, lifestyle modification, and maintenance of Agni play a crucial role in preventing the onset and progression of *Madhumeha*.[5]

From the modern perspective, Diabetes Mellitus is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both, leading to significant microvascular and macrovascular complications if left untreated. Modern diagnostic methods, including fasting plasma glucose, oral glucose tolerance test, random blood glucose, and HbA1c estimation, enable accurate diagnosis and disease monitoring.[8]

An integrated understanding of both Ayurvedic and modern concepts facilitates early diagnosis, appropriate differential diagnosis, individualized management, and prevention of long-term complications. Correlating the classical descriptions of *Madhumeha* with

contemporary scientific evidence not only validates the relevance of Ayurvedic principles but also supports the development of a holistic and patient-centered approach for the prevention and management of Diabetes Mellitus. Further well-designed clinical and translational studies are warranted to strengthen the evidence base and promote the integration of Ayurveda with modern medicine in diabetes care.[12]

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