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## Etiopathological Study of *Madhumeha* and its Complication; Prevention through Yoga and Ayurveda

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### ABSTRACT

*Madhumeha* (Diabetes mellitus) is becoming significant problem for the entire world day by day. Diabetes mellitus exploits a decent sized freight worldwide in terms of early mortality, morbidity and health care costs, and genetic vulnerability. It has been increased due to sedentary lifestyle; ill-advisable food habits and stress. In *Ayurveda*, its one among *Mahagada* (untreatable diseases), also the diagnosis and management of *Madhumeha* (Diabetes) is based on *Tridosha* theory. *Acharya Madhava* said the term *Prameha*, which is equivalent to group of symptoms which includes obesity, type I&II diabetes mellitus and metabolic syndrome in modern medicinal science. It is described in *Vataja Prameha*, managed by conventionally with exercise, diet regimens, internal medication, *Yoga, pranayama* and *Pathyapathya*. Signs and symptoms of Diabetes mellitus are difficult to diagnose in an early stage, which ultimately leads to many complications like *Prameha Pidika*. Therefore, in this study the etiopathogenesis of *Madhumeha* along with its complication was studied according to *Ayurveda* as well as modern science literatures. The preventive measures in *Ayurveda* can stave off through *Samprapti Vighatana*. Specific protocol for prevention of *Madhumeha* through *Yoga* and *Ayurveda* was established.

### KEYWORDS

*Madhumeha, Etiopathogenesis, Beejadosh, Updrava, Yoga*



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## INTRODUCTION

India leads the world with major number of diabetic patients which is the major cause for mortality. In Indian literature it has been validated that diabetic patients do not attain the HbA1c below 7%. *Madhumeha* is one type of *Vataja pameha*<sup>1</sup> which comes under 20 type of *prameha*<sup>1</sup> and it can be correlated with Diabetes mellitus, its synonyms in *Ayurveda* are – *Madhumeha*, *Ojomeha*, *Ksaudrameha*<sup>2</sup>. Sedentary life style and stressful mental illness is leading to foremost cause of Diabetes Mellitus – a perfect example for a lifestyle disorder. Diabetic patients are progressively increasing worldwide, because of modern lifestyle and comfortable living standards, without any physical exertion, eminence of packaging foods in daily diet, sleeping disturbance is also cause of various lifestyle disorders like obesity, diabetes mellitus, hypertension, coronary heart diseases, CCF etc. Diabetes is now the diseases in trends along with serious complications. It is necessary to make aware the society about the etiology and complications of diabetes mellitus.

In *Ayurveda*, *Updravas* (complications) of *Madhumeha* are described in detail such as *Putimansapidaka*, *shaithilya*, *murcha* etc<sup>3</sup>.

It can be correlated with Peripheral neuropathy causing gastrointestinal illness, cardiovascular symptoms, genitourinary and sexual abnormality, Retinopathy, Nephropathy (Renal failure) are also the late consequences of DM (Diabetes mellitus). Thus complications of DM are more life threatening in patients therefore study of complications is need of an hour. Also *Raktadushti lakshna* is the important *dushya* of *madhumeha* in *Ayurveda* and modern science. According to *Dalhanacharya* for pathogenesis of any *updrava raktadushti* is a prime factor<sup>4</sup>. So, In this article an attempt is made to find the ethiopathological components of *Madhumeha* (diabetes mellitus) and its management through yoga and *Ayurveda*.

## MATERIALS AND METHODS

Literature review regarding *Prameha*, *Madhumeha*, its *Updravas*, *Samprapti* was completed by refereeing authoritative books of *Ayurveda*. Prevention and its management through *Pathya- Apathya* (life style modification), *Yoga and Ayurveda* is reviewed from various *Ayurvedic* texts, research publications.

The reviewed materials are compiled in sequential manner as well as critical review is done and an attempt is been made to draw some fruitful discussion.



## SUMMARY

### Paribhasa

“Prakarsena Prabhutam Pracuram Varam Varam Va Mehati Mutratvagam Karoti Yasmina Roge Sa Pramehah” – Ma. Ni<sup>5</sup>.

**33/1.** Which means frequent excessive and cloudy micturation with high frequency, hazy consistency etc.

*Madhumeha* comes under the *Astamaharoga* or *Astamahagada* in *Charaka Samhita Indriyasthanā*<sup>6</sup> which indicates the bad prognosis of the disease. According to *Ayurveda* the *Nidana* of *madhumeha* is the consequence of vitiation of *dosha*, chiefly the *Vata dosha*.

*Acharya Charak* has mentioned *madhumeha* also as a *kulaja vikara* due to defect in the *beeja* (Shukra and Shonita)<sup>7</sup>.

*Acharya Sushruta* had mentioned it as “*Sahaja vyadhi*” in perspective of the genetic factors, two factors i.e. *hereditary* and *dietetic* are generally responsible for causing the disease *prameha* and the patients are classified accordingly as *sahaja* (inborn) *pramehi* and *apathyanimittaja* (related to dietary and lifestyle factors) *pramehi*<sup>8</sup>.

#### A. *Sahaja Prameha*

*Prameha* has been declared as a *kulaja vikara* due to some genetic defect. The over consumption of *madhura rasa* (*apathya sevana*) during pregnancy is responsible for inducing *Prameha* at the time of fetal

development, similarly *Chakrapani* explains i.e. genetic defects and dietetic factors are important cause in the manifestation of *sahaja prameha* or *Madhumeha*.

#### B. *Apathya Nimittaja Prameha*

The general etiology of *prameha* including *kaphaja*, *pittaja*, and *vataja prameha* described in the *Ayurvedic classics* are responsible for vitiation of *dosha* and it is most important for *prameha/Madhumeha*.

S.No.	AHARA	VIHARA
1.	Guru dravya (heavy)	Swapna sukha (sleep)
2.	Snigdha dravya (unctuous)	Asya sukha (sedentary life)
3.	Amla dravya (Sour)	Avyayama (no exercise)
4.	Lavana rasa (Salty taste)	Chintaaheen
5.	Nava anna, Nava pana (new grown grains & beverages)	Samsodhana karmaheenta
6.	Anup Mamsarasa	
7.	Guda (jaggery)	

#### SAMPRATI (Pathogenesis) of *Madhumeha*<sup>9</sup>:-

The *Samprapti* of *Madhumeha* is described by various texts are explained below:

According to *Charaka* - In *Charaka chikitsa sthana* has considered to be *Madhumeha* is caused by *Shuddha vata*. *Vata dosha* gets aggravated by *vata vriddhikara nidana* and it is leading to *kshaya* of *kapha*, *pitta dosha* and *dhatu* such as *vasa*, *majja*, *lasika* and *oja*. If *Vata* gets aggravated again then it carries *oja*



towards *basti* and thus leading to *Madhumeha*. Due to ignorance of proper treatment *kaphaja* or *pittaja prameha* achieved the advanced form; it is called *Apratikarita Vatanubandhita Madhumeha*. According to *Sushruta* - Due to negligence of treatment they get convert into *Madhumeha*. It is called *Kalaprabhavjanya Madhumeha*.

According to *Vagbhata* - Due to *kshaya* of *Saradhatus*, *vata* gets aggravated which leads to madhu (honey) like urine, it is called *Dhatuksayajanya* or *Dhatuapkarshanjanya Madhumeha*.

Excessive consumption of sycophantic substances, *Amla*, *lavana*, *guru* (heavy), *snigdha ahara* (oily food) etc. and excessive sleep and deskbound lifestyle etc. lead to excessive raise of *kapha*, *pitta*, *meda* and *mamsa* which causes *srotorodha* (obstruction on *srotas*) along with *avarana* (covering) of *vata*. This vitiated *vata* carries the *oja* to *basti* resultant in *Madhumeha* and lakshanas become known of *vata*, *pitta*, *kapha*. It is called *Avaranajanya Madhumeha*.

#### **ADA Criteria of Diagnosis Mellitus<sup>10</sup>:-**

The classical triad of symptoms of hyperglycemia in Diabetes includes the following:

Polydipsia, Polyuria, Weight loss

*Random blood glucose* -  $\geq 200$ mg/dl accompanied by the classic symptoms of

diabetes sufficiently confirm the diagnosis of Diabetes mellitus.

*Fasting:-*

- Normal-  $< 100$  mg/dl
- Impaired fasting glucose-  $> 100$  and  $< 125$  mg/dl
- Diabetes mellitus-  $\geq 125$  mg/dl

*2-hour Post prandial :-*

- Normal-  $< 140$  mg/dl
- Impaired glucose tolerance-  $> 140$  and  $< 199$  mg/dl
- Diabetes mellitus-  $> 199$  mg/dl with symptoms

*Screening test:-*

*HbA1C – Normal –  $< 5.6\%$*

*Abnormal glucose homeostasis –  $5.7$  to  $6.4\%$*

*Diabetes Mellitus -  $> 6.5\%$*

**Hb1Ac** also serves as prognostic indicator for Glycemic control.

**Investigation:-**

- O.G.T.T. (Oral Glucose Tolerance Test)
- Lipid profile
- Liver function test
- HbA1C (Glycosylated Haemoglobin (GHb))
- Blood glucose-Random, Fasting, Postprandial
- Urine tests (Routine and microscopic)– for Proteinuria



- Immediate comprehensive eye examination (Fundus)

#### **COMPLICATION (UPDRAVA)<sup>11</sup>:**

*Trishna, Atisara, Daha, Daurbalya, Arochaka, Avipaka, Putimamsa pidika, Alaji, Vidradhi etc.*

*Vataja prameha- Hridgraha, Lauhya, Anidra, Stambha, Kampa, Shula, Baddha purishatva*

#### **Prameha Pidika<sup>12</sup>**

*Prameha pidikas* are described in *Brihatrayi* as a major complication of *prameha*, and these may develop without *prameha* in the individuals having primary *medodushti*. These *pidika* require surgical intervention. In relation to origin of *prameha pidika*, *sushruta* says that due to atony of *rasayana* in patients of *prameha*, *doshas* do not move upward and as such *pidika* appear in lower parts of the body in case of *madhumeha*. *Sushruta's pidika* is *Asadhya*. He narrated that these *pidika* occur due to *tridosha* and vitiated *meda* and *mamsa*. These *pidika* are mainly found in muscular regions, joints and vital parts (*Marma*). *Updravas* (complications) of *Madhumeha* is described in *Ayurveda*. "Rakta" (blood) is one of the *dushya* in *madhumeha*. Many complications of *madhumeha* mentioned in *Ayurveda* and modern science and *raktadushti* (vitiation of blood) *lakshnas* (symptoms) described in *Ayurveda* are same. Assessment of

*raktadushti* in complications of *madhumeha* can be helpful to avoid complications and save the patients from hazardous effects.

#### **Sadhya-Asadhyata (Prognosis) –**

Sahaja prameha (due to a genetic defect) –  
Asadhya (incurable)

Chronic *madhumeha* (if not treated) –  
Asadhya because it can lead to severe complication like CRF (Nephropathy), Retinopathy and Multiple organ failure.

#### **MANAGEMENT (Prevention)<sup>13</sup>:**

The ancient Ayurvedic principles of preventive (*Nidan parivarjan*) and purificative measures (*Samshodhan Chikitsa*) with appropriate single/compound formulations (*aushadi*), diet (*pathya-apathya*) management has been proved to be fruitful for better wellbeing in *Madhumeha* (Type-II diabetics) patients. In general Type 1 Diabetes mellitus i.e. *Krishna Pramehi* patients are advised to have *Santarpaka* (*Bringham*) medication as well as a diet which increase *Dhatus* in the body.

In type 2 Diabetes, *Apathyanimittaja Rogi* (Obese diabetic patients) is treated by *Samshodhan* (purification) due to intense increase of *Doshas*.

1. *Snehana* (*Bahya and Aantarika*)
2. *Shodhana* (Purification therapy under three categories) – *Vaman, Virechana, Vasti* (*Asthapana/Niruha*)



3. *Shamana* with Single and Compound drugs

4. Exercise and life style modification & following regular regimen of exercise, *yogasana*, pranayama and regular food & sleep, following *Ritucharya & Dincharya*.

5. Rasayana – Triphala and Shilajatu Rasayana

### **YOGA<sup>14</sup>**

*Yoga* promotes all types of metabolism in the body. So *Madhumehi* should perform *yoga*. It is important to note that vigorous exercise is contraindicated in lean and weak patients with severe diabetes. *Yoga* will absolutely help in *Madhumeha*. *Yoga* now-a-days has fascinated the attention of Indian as well as western people.

Common *Aasana* that can be very effective in Diabetes are *Shalabhasan*, *Mayurasan*, *Suryanamaskar*, *Dhanurasana*, *Trikonasana*, *Thadasana*, *Sukhasana*, *Bhastrika pranayama*, ***Pashchimotasana***, ***Ardhmatsyendrasana***, *Pawanmuktasana*, *Bhujangasana*.

*Asana*:-

*Meditative postures*: *Siddhasana*, *Padmasana*, ***Vajrasana***, *Swastikasana*

*Relaxative postures*: ***Savasana***, *Makarasana*,

*Rehabilitative or cultural postures*: the major *asana* appear to have been meant for posturing the spine by forward stretching,

*backward stretching*, *lateral stretching*, *vertical stretching* and *twisting*.

Results indicated that there was a substantial decrease in fasting glucose levels and postprandial blood glucose levels. The physiological effect of above mentioned postures with controlled breathing stimulates somato-endocrine mechanism ultimately effecting kinetics of Insulin.

### ***Pathophysiology According To Ayurveda & Yoga***

Etiological factors *Prajnaparadha* (wrong knowledge) & *Kaphapradhana vihara*, *Ahara* (Sedentary lifestyle, sleeping in daytime, Excessive intake of fermented food, oily foods,

excess sweets and meat)

↓

Aggravation of *kapha dosha*

↓

Avarana (Obstruction in movement of *vata*)

↓

Rodha (Obstruction) to *pitta*

↓

*Pitta* cannot reach the target sites

↓

Sanga (Stagnation) of *pitta*, vitiation of *pitta*

↓

*Madhumeha* (Metabolic disorders DM)





## **Reversing Pathophysiology Ayurveda & Yoga**

Prevention is better than cure, *Yoga*



Change lifestyle counseling combats stress  
*satva* increases

Detoxification Virechana-Purgation



Removes excess *Kapha*



Releases blockage of *Vata*



Freed *Vata* moves the pitta to the site of  
action



Restores balance



*Ayurveda doshas and Yoga guna*



*Vipaka* normalized (Glucose & lipid  
Metabolism), maintain dosha balance and  
prevention of life styles disturbance=  
*Yoga*<sup>15</sup>

### **Primordial prevention in Ayurveda**

*Dincharya - Vyayama balardh vyayam*

*Ashtvidh Ahar visheshayatan and Dwadash*

*Ashan Vichar - Use of proper dietary habits  
in very beginning of life i.e. childhood*

### **Primary prevention in Ayurveda**

Lifestyle modification - *Sadvritta* (follow  
good lifestyle), *Nidana Parivarjana*  
(avoiding etiological factors)

### **Secondary prevention in Ayurveda**

In *Madhumeha*, drugs having *rasayana*,  
*balya* and *jivaniya* action as well as  
*pramehaghna* properties like *Amalki*,  
*Guduchi*, *Pippali*, *Haridra* etc. Such  
measure which reduce *meda* and *kapha* and  
*Upadrava* for example heavy work out,  
*ruksha udavartana*, *ratri jagarana* etc.

### **Tertiary prevention in Ayurveda**

*Ayurveda* has partial role at this stage but  
use of certain *Rasayana* drugs *Amrita*,  
*Amalaki* etc along with diet restriction help  
to reduce complications.

### **Pathyapathya<sup>16</sup>:**

#### **Pathya**

Cereals: Old rice (*Oriza Sativa*)-after 1  
year

Barley (*Hordeum vulgare*)

Godhuma (wheat)

Kodrava (grain variety-*Paspolum*  
*scrobiculatum*)

Pulses: Adhaki (red gram-Cajamus cajan)

Kulattha (horse gram)

Mudga (green gram)

Vegetables: *Green Banana*,

*Tanduleyaka (Amaranthus spinosus)*

*Matsyakhshi (Alternanthera sessilis)*

Bitter vegetables (*Tiktasakam*) like

*Methica (Methi- Fenugreek leaves)*, *Carrot*  
*Karavellaka (Bitter gourd, Chaulai, Palak.*

*Mustard leaves*

Fruits: *Orange, Watyermelon, Apple, little*  
*ripe papaya, Jambu (Syzigium cumini)*,





*Kapitha* (*Feronia limonia*), *Amlaki* (*Embllica officinalis*)

Oils: *Nikumbha* (*Danti- Baliospernum montanum*), *Ingudi* (*Balanitis aegyptiaca*), *Atasi* (*Linum usitatisimum*), *Sarsapa* (*Mustard*). *Rice brain oil*

*Others: jiggery*

#### In *Charaka Samhita*:

A. *Manthas* (flour of various corn mixed with water), *kashayas* (decoctions), barley powder.

B. *Yavaudana*, *vatya*, *saktu* and *apupa*.

C. *Purana shali dhanya* (rice variety) cooked and mixed with the soup of *mudga* (pulse variety) etc. and preparations of *tikta* (bitter) vegetables.

D. Cooked *shastika* rice and *trina dhanyas* mixed with the oil of *Danti*, *Ingudi*, *Atasi* and *Sarshapa* (mustard).

E. The *Mamsa* (flesh) of *viskira*, *pratuda* and *jamgala* animals and birds are also recommended.

#### *Apathya*

Pizza, Fast foods – Pasta, Noodles, Rich proteins, Yoghurt, Dried fruits, Potato, Sugarcane, oily, All kind of Sweets, White bread, Beverages and Bakers food

## CONCLUSION

*Madhumeha* is a disease characterized by *prabhoot*, *avil mootrata*, and *mootra madhurya*. Clinical appearance of *Krishha*

*Pramehi* & *Sthula Pramehi* can be correlated with type-I & type-II diabetes, respectively. *Ayurvedic* treatment principles improve one's routine lifestyle and maintain normal blood sugar level. There are many complications of *Prameha* related to *Raktadushti* such as *putimansapidaka*, *Vidradhi*, *aruchi*, *avipak*, *Trishna*, *Daaha*, *Amlika*, *Jwara*, *shosha*, *Murcha*, *Daurbalya*, *Kampa* and *Panduroga*. *Raktadushti* is also indirectly responsible for developing complications such as *shwasa*, *mansopachay*, *Hrudishula*, *Hrudgraha* and *makshikoupsarpan*. In current era, life style modification with adopting appropriate food habits, *Dincharya*, *Ritucharya*, *Asta* and *Dwadasha Ahara vidhi*, *Yoga* & exercise have very important role in the management of *Madhumeha*.



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