



Critical Review on the Concept of *Madhumeha* (Diabetes Mellitus)

Dr Manoj Singh Raghuwanshi¹, Dr Shailza Kumari², Dr Ketan Sharma³, Dr, Veena⁴, Dr. Yogendra Sharama⁵

^{1,3,4,5}PG Scholar, Department of Samhita & Maulik Sidhhant, NIA JAIPUR

²Associate Professor, Department of Samhita & Maulik Sidhhant, NIA JAIPUR

ABSTRACT

Diabetes mellitus is emerging as one of the most rapidly escalating health concerns worldwide, with India being particularly afflicted by its increasing prevalence. This metabolic disorder arises from a deficiency or malfunction in insulin production, significantly impacting millions of individuals. Fortunately, *Ayurveda*, an ancient system of natural medicine, offers a holistic approach to prevention. The primary factors contributing to this epidemic are sedentary lifestyles and dietary choices. In *Ayurveda*, diabetes is characterized as a *vataja prameha*, a condition rooted in the imbalance of the *Vata dosha*. The management of this condition primarily involves conservative approaches, including lifestyle modifications and internal medication. *Ayurveda* emphasizes the significance of regular physical activity and dietary habits that align with an individual's unique constitution. This personalized approach can significantly reduce the risk of diabetes. Moreover, *Ayurvedic* internal medications can help maintain optimal blood sugar levels, reducing the need for conventional pharmaceutical interventions.

Keywords: Diabetes mellitus, *Ayurveda*, *Madhumeha*, *Prameha* .

Introduction

Diabetes mellitus is a medical condition characterized by the accumulation of glucose in an individual's urine and blood, a state referred to as hyperglycemia. The term "diabetes" originates from the Greek word "diabaino," meaning 'siphon through,' and "mellitus," from the Latin word "mel," signifying 'sweetened with honey.' Diabetes mellitus is essentially a metabolic disorder stemming from the malfunction of the pancreas (islets of Langerhans) which is responsible for secreting the hormone insulin. Insulin plays a crucial role in effectively utilizing carbohydrates in our body. In cases where insulin is either absent due to a metabolic disorder or not functioning correctly, carbohydrates accumulate in the bloodstream as glucose. This excess glucose then appears in the urine, a primary characteristic of diabetes mellitus. In recent years, diabetes mellitus has garnered significant notoriety, emerging as a prevalent global silent killer. The World Health Organization (WHO) has identified India as the country experiencing the swiftest surge in diabetic patients. It is estimated that between 1995 and 2025, the number of diabetic patients in India will surge by 195%. The challenge with diabetes mellitus lies in its elusive early-stage diagnosis. However, individuals who adhere to an *Ayurvedic* preventive regimen from the outset can effectively avert or manage this condition if they are already afflicted.

Prameha (*Madhumeha*)^{1,5,6,7}

The term *Prameha* is derived from *Pra*, meaning excess, and *Meha*, signifying the passing of urine, thus indicating the condition of excessive and turbid urine referred to as '*prabhootha avila mootrata*'. which is a type of diabetes mellitus, are categorized under *Prameha*.

Madhumeha has been recognized by the Indian population since ancient times, as evident from the annals of Indian medicine. It pertains to a condition in which an individual excretes unusually sweet urine, a condition akin to what we now label as diabetes. The word "diabetes" itself derives from the Greek word meaning "a passer through," and "mellitus" signifies "honey." *Madhumeha* is expounded in *ayurveda* as a manifestation of *dhatvagnimamdyā*, bearing notable resemblances to contemporary Diabetes Mellitus, which is also a metabolic disorder. This demonstrates that *ayurveda*, the ancient Indian medical system, was one of the early sources of comprehensive insights into this ailment.

In *ayurveda*, *Madhumeha* is classified as a subtype of *Vataja Prameha*, a group of disorders related to urination. *Prameha* is categorized as an *anusamgi vyadhi* and is considered one of the *asta mahagada*. It is associated with an imbalance in the three *doshas* (*Tridoṣaja Vyadhi*). The *Ayurvedic* scriptures elaborate on two primary pathways through which this condition originates: one is linked to excessive dietary intake (*Santarpanajanya*), and the other is associated with the depletion of bodily tissues (*Apatarpanajanya*).

Causes

Taking daytime naps, a sedentary lifestyle, a lack of physical activity, a tendency towards laziness, and indulging in a diet primarily consisting of cold, oily, sweet, and high-fat foods and beverages.

Classification of Prameh/ Madhumeha^{2,3}

Diabetes mellitus, known as madhumeha, can be classified in several ways:

I. Etiological Classification:

1. *Sahaja* (Hereditary): This type is attributed to chromosomal defects inherited from one's parents.
2. *Apathya Nimittaja* (Caused by Unwholesome Habits): This includes factors like diet and exercise.

II. Physical Management Classification:

1. *Apatarpanajanya Prameha*: This relates to lean diabetics.
2. *Santarpanajanya Prameha*: This pertains to obese diabetics

III. Doshic Causes Classification:

1. *Vataja Pramehas*: There are a total of four *vataja pramehas*.
2. *Pittaja Pramehas*: There are a total of six *pittaja pramehas*.
3. *Kaphaja Pramehas*: There are a total of ten *kaphaja pramehas*.

Among these categories, diabetes mellitus is considered to be one of the four *Vataja pramehas*.

Samprapti (Pathogenesis)^{1,3,4}

When *Kapha dosha* increases due to various etiological factors, it can affect different *dhatu*s (body tissues) such as *rasa* (plasma), *rakta* (blood), etc. This increased *Kapha*, characterized by its fluid and heavy properties, tends to spread throughout the body, causing vitiation. As it spreads, it mixes with *medas* (fat or adipose tissue), *mamsa* (muscles), and *kleda* (body fluids). The vitiated body fluids, under the influence of *Kapha*, are drawn towards the urinary bladder, leading to the condition known as *prameha* (a general term for various urinary disorders).

Similarly, the vitiation of these *dhatu*s can be influenced by *Pitta* and *Vata doshas* as well, resulting in different presentations of *prameha*.

Samprapti ghataka of Prameha⁴

1. *Dosha- kapha* predominant *tridosha*, *apanavata*, *vyanavata*.
2. *Dushya -dhatu* predominant along with *rasa*, *asrik (rakta)*, *mamsa*, *majja*, *vasa*, *shukra*, *oja*, *lasika*, *kleda* & *sveda*.
3. *Srota- medovaha*, *mutravaha*, *udakavaha*.
4. *Srotodushiti* - mainly *atipravritti*, *sanga*.
5. *Sancaya – Dosa in svasthan*
6. *Prakopa- dosa in sarva sharir*
7. *Sanchar(prasara)- rasayani*
8. *Sthanasamsraya – mutravaha srotas*
9. *Vyaktavasta- mutra marg*
10. *Agni- vaishmya* of all *agnis (dhatvagnimandya)* particularly *dhatuagni*.
11. *Adhishthana - vasti, sarva sharira*.
12. *Udbhavasthana- koshta (amapakvasayotha)*.
13. *Ama- medogata (ama)* produced due to *jathragnimandya* and *dhatvagnimandya*.
14. *Bhedavastha-* occurrence of *updravas* such as *Prameha pidika* and *putimamsa*.

Poorva roop (Premonitory sign)

They are indicative of the initial signs of an impending disease. These symptoms encompass the buildup of debris on the teeth, affecting the mouth, eyes, nose, and ears. Additionally, individuals may experience a burning sensation in the palms and soles, skin stickiness throughout the body, increased thirst, a sweet taste in the mouth, and even a noticeable sweetness in the urine.

Roop (clinically symptoms)^{3,4,8,11}

The primary clinical symptoms of *prameha*, a term used in *Ayurveda* to describe diabetes, include:

1. *Malina danta* - Tartar in teeth
2. *Hasta pada daha* - Burning sensation of hands and feet
3. *Deha chikkanata* - Excess glossy/oily skin
4. *Trishna* - Excessive thirst
5. *Madhuryamasya* - Feeling sweetness in the mouth
6. *Prabhuta mutrata* - Excessive urination
7. *Avila mutrata* - Turbid urination
8. *Madhu samana varna* - Urine having the color of honey
9. *Sweda* - Excessive perspiration
10. *Anga gandha* - Bad body odor
11. *Shithilangata* - Flaccidity of muscles
12. *Shayana asana Swapna sukha* - Desire for a sedentary lifestyle
13. *Shitapriyatwa* - Desire for cold food and environment
14. *Gala talu shosha* - Dryness of the palate and throat

In conventional medicine, untreated diabetes is characterized by classic symptoms such as weight loss, increased urination (polyuria), excessive thirst (polydipsia), and increased appetite (polyphagia).

Primary Symptoms (According Modern Science)¹²

1. Excessive Urination (Polyuria)
2. Uncontrolled Hunger (Polyphagia)
3. Extreme Thirst (Polydipsia)
4. Fatigue
5. Muscle Aches
6. Dizziness
7. Numbness and Tingling in Multiple Nerves (Polyneuritis)
8. Vision Problems

Prognosis of Madhumeha^{1,14}

Acharya Charaka classifies prognosis into three categories as follows:

1. **Sadhya(Curable)**- This category includes patients who are diagnosed early in the disease's onset, those who are obese (sthoala), and those whose disease originates from apathyaja causes.
2. **Yapya(Palliable)**- Conditions such as Pittaja prameha and certain types of kaphaja pramehas can be managed effectively with treatment (palliative management).

3. **Asadhya(Incurable)**- Vataja prameha and inherited diabetes fall into the incurable category, as do patients who are lean (krisha) and suffering from the Sahaja variety of the disease.

Chikitsa (Treatment)^{5,6,7,10}

The treatment for *prameha* in *Ayurveda* is personalized, taking into account an individual's constitution. It involves a comprehensive transformation in the person's lifestyle, which includes medication and dietary adjustments. Patients are encouraged to adopt a healthy way of life, stay physically active, and address the mental aspects of the condition.

The treatment principles for diabetic patients can be categorized based on two types:

1. Sthulya (Obese)

2. Krusha (Asthenic)

1. In *Sthulya* (Obese)

The main focus should be on utilizing excess fat effectively. This can be achieved through the following approaches:

1. *Shodhana* (purification process)
2. *Apatarpana* (reduction in body weight through diet control, exercise, or medication)
3. Fasting
4. Diet control
5. Cleansing therapies, such as *vamana* (inducing emesis), *virechana* (inducing purgation), and *basti* (application of medicine through the anal route, in specific conditions)
6. Physical exercise

2. *Krusha* (Asthenic)

In the case of a lean patient principles, the primary focus of treatment should be to enhance their strength and vitality. This is achieved through the use of tonics, a nourishing diet, and appropriate medications. It is essential to refrain from subjecting the patient to excessive fasting or starvation (*Langhana* or *Apatarpana*).

It's important to note that regardless of whether the patient is overweight or lean, if they experience complications such as tumors (*Gulma*), wasting diseases (*Kshaya*) like tuberculosis, or abdominal pain, they should always be provided with some form of nourishment. Both diabetic and obese individuals often experience heightened hunger and thirst, making it imperative to ensure they receive some level of nutrition.

Aahar (Diet)

Diet plays a crucial role in managing diabetes and preventing complications. In traditional texts, various food items suitable for individuals with diabetes are described:

1. **Cereals:** Barley (*Yava*) is highly recommended, and various preparations such as *Mantha*, *Odana*, *Appopa*, bread, and *Roti* can be made from barley. Wheat (*godhooma*) and old rice (*purana shali*) are also acceptable cereals for diabetic patients.
2. **Pulses:** Green gram (*Mudga*), Bengal gram (*Chanaka*), horse gram (*Kulattha*), pigeon pea (*Adhaki*), and others are suitable for consumption.
3. **Vegetables:** Bitter vegetables, including bitter melon (*Karela*), fenugreek (*Methi*), Vietnamese luffa (*patola*), garlic (*rasona*), Cluster Fig Tree (*Udumbara* or *Goolar Fig*), and others, should be included in the diet.
4. **Fruits:** Black berry (*Jambu*), Indian gooseberry (*Amalaki* or *Amla*), Wood Apple (*Kapitta*), Asian Palmyra palm (*Tala phala*), Date Sugar Palm (*Kharjura*), Indian lotus (*Kamala*), and Nymphaea (*Utpala*) can be consumed.
5. **Seeds:** Seeds of *Kamala* and *Utpala* are permissible.
6. **Flesh:** Deer flesh (*Harina mamsa*), rabbit (*Shashaka mamsa*), and birds like pigeons (*Kapotha*), quails (*Titira*), and others can be included.
7. **Liquor:** Old wine (old *sura*) may be consumed in moderation.
8. **Oils:** Mustard oil (*Sarshapa taila*) is recommended, and *Ingudi Ghrita* (*Balanitis aegyptiaca Ghee*) may be used for individuals with *pitthaja prameha*.

In accordance with *Ayurvedic* principles, it's advisable to commence with a light diet (referred to as "*laghu bhaksha*" or "*laghu ahara*") and then progressively increase food intake. This practice emphasizes the importance of closely monitoring the state of one's *Agni*, which is synonymous with

digestion. Since diabetes is a condition associated with an altered metabolism, it's crucial to pay special attention to the status of digestion and metabolic processes.

Exercise (*Vihar*)⁷

Intensive physical activities are recommended for individuals with diabetes and obesity. These activities aim to promote the efficient utilization of body fat and the consumption of glucose. The specific exercises can be adjusted based on the individual's location and the current season. Nevertheless, engaging in rigorous exercises is crucial. Some of the demanding and beneficial exercises recommended by *Shushruta* are as follows:

1. *Vyayama* (exercises)
2. *Niyuddha* (fighting)
3. *Kreeda* (games)
4. *Gajacharya, turagacharya, rathacharya, padacharya*, which involve activities like riding elephants, horses, carts, and walking, among others.

In addition to the mentioned strenuous exercises, there are other exercises that can be tailored to one's financial status and community:

1. For those in the lower-income group, individuals with diabetes should walk approximately 100 miles barefoot, without staying in one place for more than one night, and sustain themselves by begging for food while practicing restraint on their senses, akin to the lifestyle of a sage (*Muni*).
2. Wealthier individuals with diabetes should consume specific foods like *Shyamaka, Kodrava, Amalaka, Kapitha*, and live alongside domestic animals, particularly cows. Their diet should be low in fat, or they may even consume the mentioned foods along with the cow's urine and feces, reminiscent of characters in the *Raghuvamsha*.
3. Others can engage in activities such as farming or well-digging. These exercises, as prescribed by the *Acharyas*, are strenuous and productive. these exercises serve two primary purposes for diabetics: first, they help in utilizing body fat, and second, they assist in metabolizing sugar, fat, carbohydrates, and proteins. In today's modern society, where such rigorous exercises may not always be feasible, individuals should participate in outdoor sports regularly, engage in productive work, or, ideally, practice various types of yogic exercises.
4. *Yoga*, in particular, has a positive impact on various metabolic processes in the body. Therefore, individuals with diabetes should incorporate different forms of *yoga* into their routine. *Yoga* is recognized for its benefits in managing diabetes and has gained popularity among Western populations.

Ausadhi (Drug)^{7,8,9}

The use of drugs or herbal remedies for improving fat and carbohydrate metabolism, with a focus on bitter (*Tikta*) and astringent (*Kashaya*) tastes. Here's a brief explanation of the drugs and substances mentioned:

Shilajatu: It is a sticky resin found in the Himalayas, Altai, Caucasus, and other mountain ranges. It is a traditional *Ayurvedic* remedy used for various health issues, including as a rejuvenating agent. It is believed to have antioxidant and anti-inflammatory properties and may contribute to overall well-being.

Guggulu: It is a resin obtained from the Mukul myrrh tree. It is a commonly used herb in *Ayurvedic* medicine and is known for its potential to lower cholesterol levels and help with weight management.

Haritaki: It is one of the three fruits in the traditional *Ayurvedic* formulation known as *Triphala*. It is believed to have astringent and laxative properties and is used for digestive health and detoxification.

Amalaki: It is another fruit used in *Triphala*. It is known for its high vitamin C content and antioxidant properties. It is used in *Ayurvedic* medicine to support various aspects of health, including digestion and immunity.

The mention of *Guggulu* as a hypo-cholesterolemic drug suggests that it may have properties that could help lower cholesterol levels. However, individual responses to herbal remedies can vary, and it's essential to consult with a healthcare professional for personalized advice and potential side effects or interactions.

Single formulations -

1. Take 10ml of *Guduchi swarasa* (*Tinospora cardifolia*) twice a day, and mix it with honey. (*A.H.Ci* 12/6)
2. Consume 6 grams of *Amalaki Churna* (*Phyllanthus emblica*) twice daily, and blend it with honey. (*A.H.Ut.* 40/48)
3. Twice a day, take 3 grams of *Karavellaka Phala Churna* (*Momordia charantia*) with water. (D. V. P. V. Sharma, Voll.II, page 685)

Compound preparations-1. **T. Chandraprabha**

- Dosage: 500 mg twice a day
- Administration: With water or milk
- Mentioned in: S.S.Ma.K.

2. **T. Vasant Kusumakara Ras**

- Dosage: 125 mg twice a day
- Administration: With honey
- Mentioned in: R.S. *Rasayana Vajikarana Adhikara*

3. **Brihat Vangeswara Rasa**

- Dosage: 125 mg twice a day
- Administration: With *Ajadugdha* (goat's milk) or *Godugdha* (cow's milk)
- Mentioned in: B. R. Prameha cikitsa (Possibly related to treatment for diabetes)

4. **Nisamalaki Vati**

- Dosage: 500 mg three times a day
- Administration: With *Triphala Kasaya* (a herbal decoction)
- Mentioned in: A. H. *Prameha Cikitsa*

5. **T. Mehari Ras**

- Ingredients: *Vangabhasma*, *parada bhasma*, and *Rasasindura*
- Dosage: 125 mg twice a day
- Administration: With *Ajadugdha* (goat's milk) or *Godugdha* (cow's milk)

6. **T. Meghanada Rasa**

- Ingredients: Purified *parada*, *gandhaka*, oxides of *kanta loha*, *teekshna loha*, *swarnamakshika*, *shilajatu*, *manashila*, *Triphala* and *Haridra*, prepared with *Bhringaraja juice*: Take 125 mg twice daily with *Ajadugdha/Godugdha*.

7. *Mauktika Kamadugha*: Consume 125 mg twice daily with *Ajadugdha/Godugdha*.

8. *Praval Bhasma*: Take 100 mg twice daily.

9. *Mehmudgara* (BR): Ingest 125 mg twice daily.

10. *Suvarnamalini Vasant Ras* (Ay.SS): Consume 125 mg once daily.

11. *Tarakeshwara Rasa* (BR): Take 125 mg twice daily with *Ajadugdha/Godugdha* (Reference: Page 65 of Impcops Therapeutic Index).

12. *Suvarna Vangaraja*: Consume 125 mg twice daily (Source: Dr. Subhas Rana KC's textbook).

13. *Arogyavardhini*: Ingest 500 mg twice daily.

14. *Trivanga Bhasma*: Take 100 mg twice daily.

15. *Apurvamalini Vasanta*: Consume 100 mg twice daily (Reference: BR).

Medicated Ghee -

1. *Dhanvantara Ghrita* (5 to 10 grams per day) (*Bhavapraksha*)

2. *Dadimadya Ghrita* (5 to 10 grams per day) (*Bhavapraksha*)

3. *Sinhamrita Ghrita* (5 to 10 grams per day) (*Bhavaprakash*)

Avaleha (Herbal Confections) -

1. *Saraleha (Bhavaprakash)*: To prepare this, make a decoction using the herbs *asana* (*Pterocarpus marsupium*), *khadira*, *babbula*, and *bakula* (*Mimusops elengi*). While boiling, add oxides of *tamra* and *loha*, as well as powders of *amalaki*, *danti*, *lodhra*, and *priyangu*. This formulation is beneficial for all types of *Prameha* (a disorder related to diabetes). Recommended dosage is 3 to 5 grams per day.
2. *Gokshuradyavaleha (Bhavaprakash)*: Create a decoction from *gokshura* and add *trikatu*, *nagakeshara*, *cinnamon*, *ela*, *jatipatra*, and *vamshalochana*. This preparation is also effective for various types of *Pramehas*. The suggested dosage is 3 to 5 grams per day.

Kwatha (Herbal Decoctions):

1. First Decoction: *Darvi, Surahwa, Triphala, Musta*.
2. Second Decoction: *Triphala, darvi, Vishala, Musta*.

The compositions of these two decoctions are mostly the same, with the only difference being the inclusion of *Surahwa (Devadaru)* in the first and *Vishala* in the second. *Vishala* has strong purgative properties and may be suitable for individuals with constipation.

The specific dose and duration of therapy, as well as recommendations for wholesome (*pathya*) and unwholesome (*apathy*) practices, should be determined by the physician on a case-by-case basis, considering *Ayurvedic* principles.

Conclusion

Ayurveda offers a holistic approach to diabetes mellitus, acknowledging its complexity and the need for comprehensive management. While diabetes is not entirely curable according to *Ayurveda*, the treatment methods outlined provide significant benefits.

The approach involves medicated *ghee*, *avaleha*, and decoctions, all carefully prepared with specific ingredients to address different aspects of diabetes. These *Ayurvedic* formulations aim to restore balance and vitality, ultimately improving overall health.

Consistent use of these treatments can alleviate diabetes symptoms and enhance well-being. Personalized care is emphasized, with treatment duration and dosage tailored to individual needs.

Ayurveda not only manages diabetes but also promotes longevity, health, and well-being. It envisions a long and fulfilling life (*deergha jeevanam*), characterized by good health (*sukhayu*) and positive societal contributions (*hitayu*). This approach underscores a balanced, holistic lifestyle that encompasses physical, emotional, and mental well-being.

References -

1. Madhava Nidanam; Madhavakara, Translated into English by Dr. K. R. Srikantha Murthy; Chaukamba Oriental Publisher & Distributor, Varanasi; Krishnadas Academy; 1987 ; Chapter - 33 ; Page No.- 116, 119 ; Sloka - Referred -20-36 ; Roga Vinischayam.
2. Sarangadhara Samhita: By Sarangadhara, Translated into English by Dr. K. R. Srikantha Murthy; Chaukamba Oriental Publisher & Distributor, Varanasi. ; 1984; 1)Pradhama Kanda - Chapter-7. 2)Madhyama Kanda - Chapter - 2; Page No.- 12 ; 1)37 2)69,71,108, 171.; Dravya- Kwatha, Guggulu etc.
3. Ashtanga Hridayam- Nidanasthanam; Vagbhata, Translated into English by Dr. K. R. Srikantha Murthy; Chaukamba Oriental Publisher & Distributor, Varanasi; Krishnadas Academy; 1992; Vlo -II; Chapter – 10; Page No.- 92-99; Prameha - Sankya, Nidana, Rupas, Samanya Lakshanas, Upadravas etc.
4. Yogaratnakaram- Pramehaprakaranam, By Dr. Ineqdev Thripathi & Dr. Dayashanker Thripathi, Krishnadas Ayurveda Series 54, Chaukamba Krishnadas Academy, Varanasi – 1998; Chapter - Prameha Nidana; Page No. – 622 to 641.
5. Charaka Chikitsa sthanam; By Agnivesha; Translated into English by Dr. Ram Karan & Vaidya Bhagwan Das; Chaukamba Sanskrit Series, Varanasi & Krishnadas Academy; 2001 ;
6. Sushruta Samhita : By Kaviraj Kunjalal Bhashagraha; Chaukamba Sanskrit Series, Varanasi. 1963; Vol- II; Chapter – 13; Page No.- 286-391 ; The Medical treatment of Madhumeha.
7. Ashtanga Hridayam- Chikitsa sthanam ; Vagbhata, Translated into English by Dr.K.R. Srikantha Murthy ; Chaukamba Oriental Publisher & Distributor, Varanasi; Krishnadas Academy ; Section - 4; Chapter – 12 ; Page No.- 383-390 ; Chikitsa .
8. Basavarajeeyam – 9th Chapter, Page – 433.
9. P.V. Sharma Dravyaguna Vijnana - Part –II; Chaukamba Vidya bhavan, Chowk, Banaras -1956
10. A Practical hand book of Panchakarma Procedures – CCRAS 2009; Chapter – Vamana; Page – 17; Chapter – Virechana; Page – 21; Slokas – Astanga Hridaya Sutrasthanam – 18 – 1,2 ; 8,9.
11. The Principles and Practice of Kaya Chikitsa: Dr. S. Suresh Babu ; Chaukamba Oriental Publisher & Distributor, Varanasi; Krishnadas Academy; 2007; Volume – III; Page No.- 100-109; Endocrine Diseases and Medicines

-
12. Davidson's Clinical Medicine: Edited by John Macleod ; 1984, Reprint - 1985,1986; Chapter - 12- Endocrine & Metabolic Diseases; Page No -457-465; Diabetes Mellitus
 13. A Text book of Kayachikitsa: Dr. Subhash Rande and Dr. Sunanda Ranade; Chaukamba Oriental Publisher & Distributor, Varanasi; Krishnadas Academy; Chapter - 4 - Medovaha Srotas – Prameha; Page No.- 441-451; Prameha.
 14. Bhavaprakash: Bhavamishra; Chaukamba Oriental Publisher & Distributor, Varanasi; Volume - II, Chapter – 38; Page No.- 484, 497, 498; Sloka - Referred 107; Medicines.