

**REVIEW OF ROLE OF AHAR-VIHAR AND PRAKRITI IN ETIOPATHOGENESIS OF
MADHUMEHA W.S.R. TO DIABETES MELLITUS****Dr. Pritee Versa Srivastav^{1*}, Dr. Deena Nath Singh², Dr. Vijay Kumar Rai³ and Dr. Prem Kant Yadav⁴**¹JR2 Department of Roga Nidan Evum Vikriti Vigyana.²Assistant Professor Department of Roga Nidan Evum Vikriti Vigyana.³Reader & H.O.D. Department of Swasthavritta.⁴Assistant Professor Department of Kriya Sharira.***Corresponding Author: Dr. Pritee Versa Srivastav**

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ABSTRACT

According to ayurveda, Madhumeha is described under Mahagada in Samhita and Sangraha grantha. In Madhumeha main dosha is Vata and dushya is Meda. The modern world is currently facing an epidemic of diseases as a result of stress, improper diet and irregular or sedentary lifestyle like Irritable Bowel Syndrome, hypertension, cardiac related diseases, gastric disorders etc. Diabetes (Madhumeha) is also one of the them. There are many aetiological factors related to madhumeha so here we observe the prime concern related to madhumeha like Ahara-Vihara and Prakriti. Ayurveda gives equal importance to Ahara and Vihara. Ahara is described as foremost pillar among the three pillars of life (Trayopsthambha viz. Ahara, Nidra and Brahmacharya). Hitakari Ahara as per Ayurveda is conducive for the maintenance of good health, longevity, strength, intellect, good voice and complexion. Vihara is defined as the other important pillar of the Ayurveda. Ayurveda believes that in order to achieve and maintain healthy living it is essential to practice a healthy Vihara like Dinacharya, Ratricharya, Ritucharya, Ahara Vidhi, Sadavritta etc And Prakriti is also an concept that has been explained in our ayurvedic literature. It expresses particular trait of an individual that is defined by specific and permanent composition of Dosha at conception. Prakriti is directly responsible for constitutional, temperamental, psychological and spiritual state of each individual.

KEYWORDS: Mahagada, Trayopsthambha, Brahmacharya, Prakriti, Hitakara/Pathya, longevity, intellect, sedentary, Dinacharya, Ratricharya, Ritucharya, Sadavritta, constitutional, temperamental.

INTRODUCTION

According to Ayurveda simple freedom from disease is not health. To become healthy, person should be happy in both states that is mentally as well as spiritually. According to it, proper balance of body, mind and spirit leads to healthy stage of an individual. It is only possible by following proper diet and lifestyle. Due to modernization and busy schedule, a person is unable to follow proper life style which in turn invites stress and many lifestyle related disorders like Irritable Bowel Syndrome, hypertension, cardiac related diseases, gastric disorders etc. Diabetes is also one of the lifestyle related disorder. It is characterized by elevated blood sugar levels. It can be caused by either insufficient insulin production or insulin resistance. There are two types of diabetes mellitus: type 1 and type 2.

Type 1 diabetes is mostly a genetic disorder where there are antibodies against the insulin. This results in the destruction of insulin leading to excess blood sugar

levels. It is mostly a disease seen in childhood. Whereas type 2 Diabetes mellitus, is mostly occurring due to lifestyle disorders. Excess body fat and increased sugar intake result in insulin resistance in the body.

On the basis of Etiological factors, sign and symptoms this disease can be correlated with Madhumeha in ayurvedic text books. In Ayurveda Prameha are a list of urinary disorders, especially characterized by profuse urination with several abnormal qualities due to imbalance of Doshas. It is of 20 types-10 of them are caused by kapha, 6 by pitta and 4 by vata. There are 20 types of Prameha described in Ayurveda, if left untreated it leads to Madhumeha. Madhumeha is a clinical entity described in Ayurveda under the types of Vataja Prameha, can be managed conservatively with modifications in diet, exercise, medication and lifestyle are all important factors in the successful treatment of type 2 diabetes and are assimilated into the ancient Indian medicinal practice of Ayurveda.

In Madhumeha the urine becomes (sweet and smells) like honey. It is of two distinct types, one due to the aggravation of Vata on account of the Dhatukshya and the other due to Kapha- Meda Avarana (Blockage of

channel) along with Vata prakopa. When there is condition of Avarana (blockage of the channels/ activity) there are the additional symptoms of the vitiation of the particular Dosha without any other apparent cause.

LITERARY REVIEW OF MADHUMEHA AYURVEDIC REVIEW

कषायमधुरं पाण्डु रूक्ष मेहति यो नरः। वातकोपादसाध्यं तं प्रतीयान्मधुमेहिनम् ॥ (च० नि०४/४४)

Patient of Madhumeha passes urine which is astringent, sweet, pale and ununctuous and it is incurable.

Madhumeha patients passes urine having sweet in taste and smell of the body resembling like honey.

Classification

1. Etiological (Sh.Ci.11/3)
 - a) Sahaja or Kulaja (Hereditary)
 - b) Apathyanimittaja (Acquired)
2. Clinicopathological (Doshik) (A.H.Ni.10/1)
 - a) Kaphaj - 10 types
 - b) Pittaj - 6 subtypes
 - c) Vataj - 4 subtypes

3. Constitutional
 - a) Sthula or Balvana (Obese Type 2 DM)
 - b) Krisha or Daurbalya (Asthenic Type 1DM)
4. Prognostic
 - a) Sadhya (Curable)
 - b) Yaapya (Pallable)
 - c) Aasadhya (Incurable)

NIDAN PANCHAKA

NIDANA

आस्यासुखं स्वप्नसुखं दधीनि ग्राम्यौदकानूपरसाः पयांसि । नवान्नपानं गुडवैकृतं च प्रमेहेतुः कफकृच्च सर्वम् ॥ (च.चि. 6/4)

- Asyasukham - Comfortable seating (luxury, sedentary lifestyle, lack of physical activities and exercise),
- Svapnasukham - comforts of sleeping, excess sleeping
- Dadhini-eating curd in excess
- Gramyaudakanupa rasaah- meat of domestic, aquatic and marshy land animals, Excessive intake of milk

- products
- Navannapaanam—vested grains & freshly prepared alcoholic drinks
- Gudavaikritam- jaggery preparations or sweets
- Kaphakrut Cha Sarvam - All diet and sedentary lifestyle activities which increase Kapha Sahaja (inherited factor)

PURVARUPA

जटिलीभावं केशेषु, माधुर्यमास्यस्य, करपादयोः सुप्ततादाहौ, मुखतालुकण्ठशोषं, पिपासाम्, आलस्यं, मलं काये, कायच्छिद्रेषूपदेहं, परिदाहं सुप्ततां चाङ्गेषु, षट्पदपिपीलिकाभिश्च शरीरमूत्राभिसरणं, मूत्रे च मूत्रदोषान्, विस्रं शरीरगन्धं, निद्रां, तन्द्रां च सर्वकालमिति ॥ (च० नि०४/४७)

Matting of hairs, sweetishness in oral cavity, numbness and burning sensation in hands and feet, dryness in mouth, palate and throat, thirst, lassitude, excess accumulation of waste over the body especially in palate, throat, tongue & teeth, adherence of excreta in body orifices, burning sensation and numbness in body, accumulation of bees and ants over the body and urine,

abnormality in the urine, fleshy smell from body, excess sleep and drowsiness. Excessive sweating, flaccidity of body, enjoys comfort in lying, sitting and sleeping, smearing in heart, eyes, tongue and ears, excessive growth of hair and nails, liking for cold substances, urine becomes sweet and whitish, breathlessness, heaviness, unctuousness and sliminess in the body.

दन्तादीनां मलाद्यत्वं प्रागूपं पाणिपादयोः । दाहचिक्कणता देहे तृट्स्वाद्वास्यं च जायते ॥"

(माधव निदान 33/5)

- Dant malyukt
- Burning sensation in palm and feet
- Smooth and shiny body
- Polydipsia

- Sweetness in mouth

RUPA (Clinical Features)

- Avila prabhuta mutra- Excessive passage of turbid

urine.

- Increased frequency of urine (Polyuria)
- Increased appetite (Polyphagia)
- Excessive thirst (polydipsia)
- Turbidity in urine
- Debility/ tiredness
- Weight loss
- Non-healing ulcer
- Visual disturbances
- Inflammation of glans penis

In elderly patients with diabetes, the presentation of symptoms may be significantly different from the classic triad of polyphagia, polyuria, and polydipsia and weight loss. They may present with anorexia, failure to thrive, loss of motivation, fatigue, anorexia, failure to thrive, loss of motivation and difficulty in concentration.

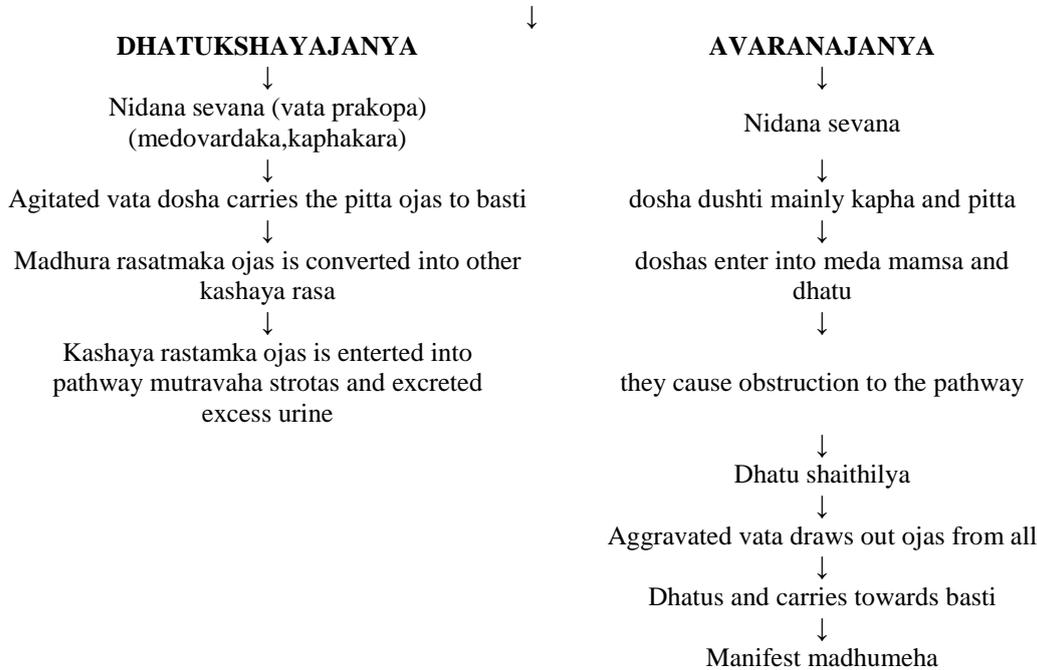
SAMPRAPTI (Pathogenesis)

Madhumeha can originate in two ways

1. Avaranjanya (By the obstruction of Vata caused by Doshas covering it).
2. Dhatukshyajanya (Depletion in body tissues causes aggravation of Vata).

In Avaranjanya Madhumeha the vitiated Kapha Dosha and Meda Dhatu (Fat tissue) obstruct the passage of Vata Dosha. In the process of manifestation of Madhumeha, the obstructed Vata is vitiated again and carries Oja to Basti (Urinary Bladder). Dhatukshyajanya Madhumeha (Diabetes caused by depletion in body tissues causes aggravation of Vata) manifests as a thin and asthenic individual due to loss of Oja. All this is Ojakhaya meaning an imbalance in Oja.

AHARAJ VIHARAJ KARAN SANTARPANATHA KARAN AADIBALAPRAVRUTTA APATHYA NIMITAJ



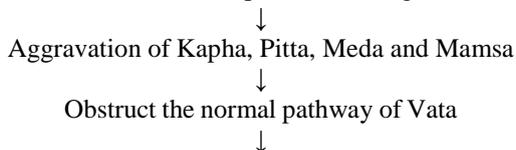
Vitiating factors involved in pathogenesis

कफः सपित्तः पवनश्च दोषा मेदोऽस्त्रशुक्राम्बुवसालसीकाः । मज्जा रसौजः पिशितं च देष्याः प्रमेहिणां विंशतिरेव मेहाः ॥ (च.चि. 6/8)

Doshas (Kapha, Pitta and Vata) and Dushyas like Medas (fat tissue), Rakta (blood tissue), Shukra (semen), Ambu (body fluid), Vasa (muscle fat), Lasika (lymph), Majja (bone marrow tissue), Rasa, Ojas (immunity) and Mamsa (muscle tissue) are responsible for the causation of Prameha which is of twenty types

Agitated Vata carries the Ojas to the basti ie Mutravaha Srotas
↓
Madhumeha

Nidana Sevana (Consumption of Etiological factors)



SAMPRAPTI GHATAK

- Dosha – Vata, pitta, kapha
- Dushya – Meda, mamsa, kleda, Rakta, vasa, majja, lasika, rasa and ojas
- Srotas – Mootravaha
- Srotodusti – Atipravrutti
- Agni – Dhatvagni
- Udhbhavasthana – Kostha

- Vyaktasthana – Mootravaha srotas

UPASHAYA & ANUPASHAYA

Pathya Ahara Dravya

- Shooka Dhanya [Grains]: Shashtika, Shali, Yava, Godhuma, Kodrava, Shyamak these must not be newly harvested.
- Shami Dhanya [Pulses]: Chanaka, Adhaki, Kulattha, Mudga
- Shaka [Vegetables]: Fresh herbs described under Tikta-varga and Kashaya- Varga.
- Mamsa [Non-Veg]: Jangala mamsa which is Laghu in nature e.g. Mriga, Dviya Mamsa which is Jangala in origin, Vishkira and Pratuda Mamsa. These Mamsa must be Shulya i.e., roasted with the help of Shulya [Tandoor]. Mamsa of Kapota, Shash, Tittir, Lava, Bahir, Bhiringraj, Vartak, Shuk etc.
- Taila [Oils]: Nikumbha, Ingudi, Sarshapa, Atasito prepare different food preparations.
- Pana [Drinks]: Sarodaka, Kushodaka, Madhudaka, Triphala Rasa, Sidhu, Sura, properly prepared
- Madhvika which is having premium quality and has fermented for a long time.

Apathya Ahara Dravya

A diet that is responsible for the genesis of Prameha can be listed under Apathya Ahara

- Shooka Dhanya [Grains]: Hayanaka, Chinaka, Yavaka, Naishadha, Itkata, Mukunda, Pramodaka, Sugandhaka. Freshly harvested grains.
- Shami Dhanya [Pulses]: Harenu, Masha- must not be freshly harvested and must not be taken with ghee
- Mamsa [Non-Veg]: Gramya Mamsa, Anupa Mamsa, Audaka Mamsa.
- Milk preparations: Payasa, Ksheera, Manaka and Dadhi.
- Alcoholic preparations: Recently prepared Madya and other drinks which are sweets.
- Others: Tila, Palala, Pishtanna, Krishara, Vilepi, Kushmanda, Ikshu and Ikshuvikara, Shaka which are not mentioned in Pathya group.

VIHARA

Yogic practices

Certain yogic postures are believed to stimulate the pancreas and improve its function. Some yogic practices are effective in Diabetes mellitus still these yogic postures should be performed only under the guidance of a qualified yoga therapist. The duration of each yoga should be decided by the Yoga therapist.

- Katiichakrasana, Tadasana, Pavanamuktasana, Gomukhasana, Shalabhasana, Vakrasana, Shashankasana, Dhanurasana, Mayursana, Pashchimottanasana, ushtrasana etc
- Bhastrika, Bhramari, Suryabhedana pranaama
- Kunjala, shankhakha prakshalana, Vastra dhauti

PRAKRITI

The Prakriti is the inherent balance resulted by the

influence of three Doshas evoked during the union of Shukra and Shonitha. At this moment of creation, the individual's physiological and psychological tendencies would be fixed. Ayurveda propagates the knowledge of place, time, one's Prakriti and good conduct as essential for health and its assessment. Therefore, Prakriti has to be utilised as first step in clinical evaluation. Prakriti Pareeksha is one among the Dashavidha Pareekshas and explained under Rogi Pareeksha. so we identify the Prakriti attributes i.e physiological, psychological, social, intellectual and spiritual aspects in Madhumeha (Diabetes Mellitus Type 2) patients. Disease Madhumeha is selected as it is a global problem and a metabolic disease caused mainly by lifestyle.

MODERN REVIEW

Type 2 Diabetes Mellitus (T2DM), one of the most common metabolic disorders, is caused by a combination of two primary factors: defective insulin secretion by pancreatic β -cells and the inability of insulin-sensitive tissues to respond appropriately to insulin. Because insulin release and activity are essential processes for glucose homeostasis, the molecular mechanisms involved in the synthesis and release of insulin, as well as in its detection are tightly regulated. Defects in any of the mechanisms involved in these processes can lead to a metabolic imbalance responsible for the development of the disease.

PATHOGENESIS OF TYPE 2 DM

The basic metabolic defect in type 2 DM is either a delayed insulin secretion relative to glucose load (impaired insulin secretion), or the peripheral tissues are unable to respond to insulin (insulin resistance).

Type 2 DM is a heterogeneous disorder with a more complex etiology and is far more common than type 1, but much less is known about its pathogenesis. These Factors are following

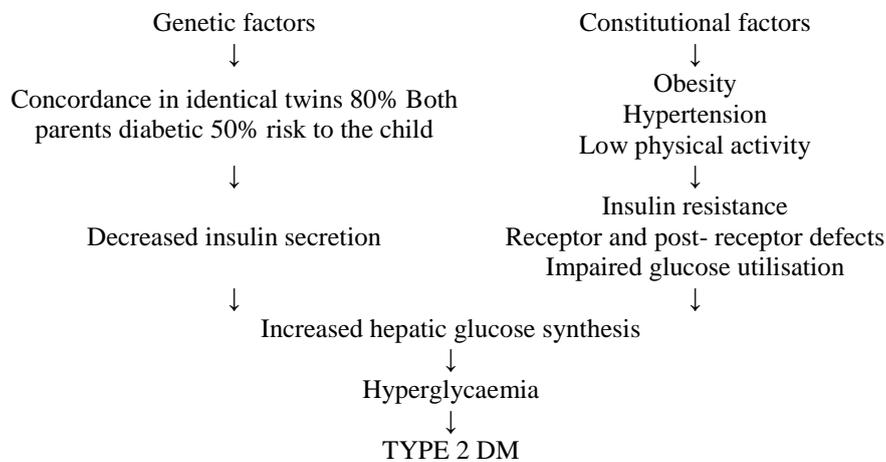
1. **Genetic factors** Genetic component has a stronger basis for type 2 DM than type 1 DM. Although no definite and consistent genes have been identified, multifactorial inheritance is the most important factor in development of type 2 DM.
 - There is approximately 80% chance of developing diabetes in the other identical twin if one twin has the disease
 - A person with one parent having type 2 DM is at an increased risk of getting diabetes, but if both parents have type 2 DM the risk in the offspring rises to 40%.
2. **Constitutional factors** Certain environmental factors such as obesity, hypertension, and level of physical activity play and in contributory role and modulate the phenotyping of the disease.
3. **Insulin resistance** One of the most prominent metabolic features of type 2 DM is the lack of responsiveness of peripheral tissues to insulin,

especially of the skeletal muscle and liver. Obesity, in particular, is strongly associated with insulin resistance and hence type 2 DM. Mechanism of hyperglycaemia in these cases is explained as under:

- Resistance to action of insulin impairs glucose utilisation and of hence hyperglycaemia.
 - There is increased hepatic synthesis of glucose.
 - Hyperglycaemia in obesity is related to high levels of free fatty acids and cytokines (e.g. TNF- α and adiponectin) affect peripheral tissue sensitivity to respond to insulin.
- 4. Impaired insulin secretion** In type 2 DM, insulin resistance and insulin secretion are interlinked:
- Early in the course of disease, in response to insulin resistance there is compensatory increased secretion of insulin (hyperinsulinaemia) in an attempt to

maintain normal blood glucose level.

- Eventually, however, there is failure of β -cell function to secrete adequate insulin, although there is some secretion of insulin (which is much less severe than that in type 1 DM) but not its total absence.
- 5. Increased hepatic glucose synthesis** One of the normal roles played by insulin is to promote hepatic storage of glucose as glycogen and suppress gluconeogenesis. In type 2 DM, as a part of insulin resistance by peripheral tissues, the liver also shows insulin resistance i.e. in spite of hyperinsulinaemia in the early stage of disease, gluconeogenesis in the liver is not suppressed. This results in increased hepatic synthesis of glucose which contributes to hyperglycaemia in these cases.



ETIOLOGICAL CLASSIFICATION

- TYPE 1 diabetes mellitus (10%)**
(Autoimmune β -cell destruction leading to insulin deficiency)
Type IA DM: Immune-mediated
Type IB DM: Idiopathic
- TYPE 2 diabetes mellitus (80%)**
(Progressive loss of β -cell insulin secretion with insulin resistance)
- Gestational diabetes mellitus (4%).**
- Specific types due to other causes (10%).**
 - Genetic defect of β -cell function due to mutations in various enzymes (called maturity-onset diabetes of the young or MODY) (e.g. hepatocyte nuclear transcription factor-HNF, glucokinase).
 - Genetic defect in insulin action (e.g. type A insulin resistance).
 - Diseases of exocrine pancreas (e.g. cystic fibrosis, chronic pancreatitis, pancreatic tumours, post-pancreatectomy)
 - Endocrinopathies (e.g. acromegaly, Cushing's syndrome, pheochromocytoma).
 - Drug and chemical-induced (e.g. steroids, therapy

for HIV/ AIDS, following organ transplantation, thyroid hormone, thiazides, β -blockers etc).

- Infections (e.g. congenital rubella, cytomegalovirus).
- Uncommon forms of immune-mediated DM (stiff-man syndrome, anti-insulin receptor antibodies).
- Other genetic syndromes (e.g. Down's syndrome, Klinefelter's syndrome, Turner's syndrome).

SIGN & SYMPTOMS

- Increased thirst.
- Frequent urination.
- Increased hunger.
- Unintended weight loss.
- Fatigue.
- Blurred vision.
- Slow-healing sores.
- Frequent infections.
- Numbness or tingling in the hands or feet.
- Areas of darkened skin, usually in the armpits and neck.

COMPLICATIONS

The following complications may occur in the later stage of Diabetes mellitus.

- Burning sensation over palmar and plantar region

- (Diabetic neuropathy)
- Boils and carbuncles
- Gangrene
- General debility
- Retinopathy
- Renal tissue damage (nephropathy)
- Cardiovascular diseases

INVESTIGATIONS

1. Measurement of the plasma glucose level
 - Random blood sugar (RBS)
 - Fasting blood sugar (FBS)
 - Postprandial blood sugar (PPBS)
2. Urine routine and microscopic
3. Glycosylated Hemoglobin (HbA1c)
4. Lipid Profile

Other related Investigations

1. Blood urea and serum creatinine
2. E.C.G.
3. Fundus examination
4. Serum electrolytes.

Diagnostic Criteria for the Diagnosis of Diabetes Mellitus

1. Fasting.
 - Normal- < 110 mg/dl
 - Impaired fasting glucose level > 110 and < 126 mg/dl
 - Diabetes mellitus- ≥ 126 mg/dl
2. Random plasma glucose level > 200 mg/dl
3. Two hours prandial glucose level > 200 mg/dl
 - Normal- < 140 mg/dl
 - Impaired glucose tolerance level- > 140 and < 200 mg/dl
 - Diabetes mellitus- > 200 mg/dl with symptom

The diagnosis is made by collaborating symptoms and plasma glucose levels.

Risk factors

1. Family history
2. Obesity (BMI > 27kg/ m²)
3. Age > 45 years
4. Hypertension (B.P. > 140/ 90 mm of Hg)
5. HDL < 35mg/ dl and/ or triglycerides levels > 250mg/ dl
6. Habitual physical inactivity

MATERIAL AND METHOD

Material Review of literature is presented hereafter thorough study of Ayurvedic classics, journals, internet and the latest research papers published in its context and compiling references from Ayurvedic as well as Modern Medical texts and previous research work on this subject.

AIMS AND OBJECTIVES

- To study and review the concept of

Prameha/Madhumeha Roga from different Ayurvedic literature.

- To evaluate the clinical sign & symptoms according to ayurveda as well as Modern medical science.
- To observe the role of ahar, vihar and prakriti in etiopathogenesis of madhumeha

DISCUSSION

Madhumeha is a type of Vataj Prameha which is a disease of Mutravaha Srotasa having Kapha dominancy which can be correlated with diabetes mellitus. Diabetes is not a new disease. It has gained gigantic disgrace in recent times because of increases in the prevalence of a sedentary lifestyle and obesity. Here we observe role of ahara vihara and prakriti which is responsible for generation of disease. Madhumeha can be prevented through lifestyle modification, diet control, and control of overweight and obesity. The specially prepared Ayurvedic diet and lifestyle plan in the present study have all the potential to maintain the glycaemic index of Madhumeha (DM) patients. Cases of Through appropriate use of Ayurvedic preventive measures such as Aharavidhi, Dincharya, Ritucharya and therapeutic measures Madhumeha (Diabetes Mellitus) can be prevented. The appropriate approach of diet, daily regimen, exercise and medication can be well managed by Ayurveda.

CONCLUSION

Madhumeha (Diabetes Mellitus) can be managed conservatively with modifications in diet, exercise, medication, and lifestyle. These are all important factors in the victorious treatment of type 2 Diabetes and are assimilated into the ancient Indian medicinal practice of Ayurveda. A similar disease has been described in modern medical sciences as Diabetes Mellitus. Which has been turned out to be the considerable silent killer today within the world. Madhumeha can be prevented if Pathya Ahara and Vihara are administered in the early phases, either before diabetes or when the disease is stabilised.

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