

## AN AYURVEDIC APPROACH TO DIABETIC NEUROPATHY

### - A REVIEW ARTICLE

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### ABSTRACT

It is amazing that 3<sup>rd</sup> century B.C. Ayurvedic texts like *Charaka* and *Sushruta Samhita* have described *Apathyanitmittaja Prameha* (High caloric diet and sedentary lifestyle induce Diabetic Mellitus) and *Sahaja Prameha* (Genetic/hereditary factors). It is a form of *Prameha* in which the patient excretes honey-like sweet urine, this condition called *Madhumeha*. It results from a complete or partial absence of insulin. Hyperglycemia, other metabolic abnormalities, and long-term harm to the heart, kidneys, eyes, nerves, and blood vessels are some of its symptoms. About 50% of diabetic patients get the relatively early and common condition known as diabetic neuropathy. Further, it is the most frequent cause of neuropathy, nontraumatic leg amputation, end-stage renal failure, and blindness. These two types (Type 1 and type2) of diabetics have been described to be treated on two different lines of management. Diabetic neuropathy is a descriptive term meaning a demonstrable disorder, either clinically evident or subclinical, that occurs in the setting of diabetes mellitus without other causes for peripheral neuropathy. The peripheral nerve system's somatic and/or autonomic regions may exhibit symptoms of the neuropathic disease. Ayurveda is managed conservatively with exercise, diet, and medicine. Drugs like *Gudmar* (*gymnema sylvestre*), *Asana* (*Pterocarpus marsupium*), *Shilajit*, *Svarnamakshika*, *Nisha* (*Curcuma longa*), *Amalaki*, *Khadir* (*Acacia catechu*), *Guduchi* (*Tinospora coedifolia*), and *Jambu* (*Syzygium*) are effective in controlling hyperglycemia. Ayurvedic Herbal, Herbomineral, drugs reduce plasma glucose levels and blockage in the blood vessels, making blood circulation and nutrients easy to control nerve damage. Ayurveda is managed conventionally with exercise, diet, and medicine.

**Key Words:** Diabetes mellitus, Hyperglycemia *Apathyanitmittaja Prameha*, Diabetic neuropathy

**INTRODUCTION:** Diabetes mellitus is a multifactorial metabolic disorder affecting many millions of people all over the world. The Word wide prevalence of DM has risen dramatically over the past two decades, from an estimated 30 million cases in 1985 to 537 million in 2021, Based on current trends, the international diabetes federation projected to rise to 643 million by 2030 and 783 million by 2045<sup>1</sup>. Increasing urbanization, stress, obesity, reduced physical activity, and pollution is

together responsible to create this position. Ayurvedic *Samhita* described a high caloric diet and sedentary style as an important causative factor of *Apathyanitmittaja Prameha* and genetic/hereditary factors described as *Sahaja Prameha*<sup>2</sup>. Diabetes mellitus is characterized by hyperglycemia, insulin resistance, and relative insulin deficiency. Type 1 DM is due to autoimmune beta cell destruction, usually leading to absolute insulin deficiency. Type 2 DM is due

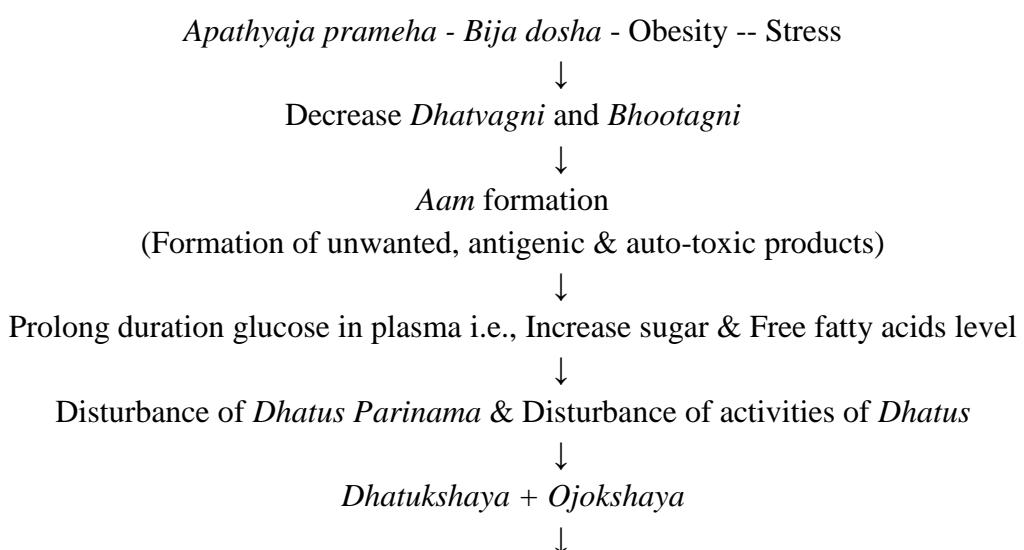
primarily to lifestyle and genetics. Type 2 DM is characterized by insulin insensitivity as a result of insulin resistance, declining insulin production, and eventual pancreatic beta-cell failure. This leads to a decrease in glucose transport into the muscle cells, liver, and fat cells. There is an increase in the breakdown of fat with hyperglycemia. Symptoms of marked high blood sugar polyuria, polydipsia, sometimes polyphagia, and blurred vision. Untreated diabetes can cause many complications. Acute complications include diabetic ketoacidosis and Non-Ketotic hyperosmolar coma. Long-term complications include diabetic neuropathy, diabetic nephropathy, diabetic retinopathy cataract, glaucoma, hypoglycemia, macrovascular complications such as ischemic heart disease, stroke, and peripheral vascular disease, etc<sup>3</sup>. Diabetes mellitus can be correlated with *Madhumeha*. Ayurveda described *vatajapremeha*<sup>4</sup>. *Prabhootamutrata*, *Avilamutrata*, and *Medodusti* are the cardinal symptoms mentioned in the classical text. Diabetic neuropathy is a relatively early and common complication

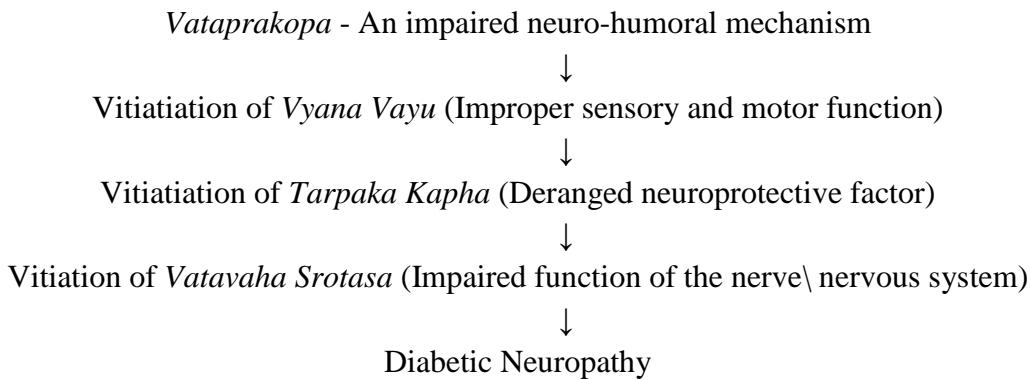
affecting approximately 50% of diabetic patients<sup>5</sup>. Diabetes as such does not kill the patient but it is the complications of diabetes that are responsible for mortality and morbidity. Diabetic neuropathy is one of the commonest complications associated with diabetes mellitus.

**METHODOLOGY:** The Review of Classical Ayurvedic texts along with Journals, Books Articles and Internet sources.

**CAUSE OF DIABETIC NEUROPATHY:** All high glycemic index food, and low physical activity cause diabetic Mellitus. High blood sugar level damaged nerve. High glycemic index food (*Aahar*)—*Navaanpanam*, *Atidadhi Sevana* (Excessive use of curd), *Gramyam-Aanupa msaatisevana*, (Excessive intake of hot and aquatic animal flesh), *Payansi-Sevana* (excessive use of milk), *Guda Vikara atisevana* (Products of Jaggery), *Sheeta-Dravya Sevana*- (cold foods), *Madhura-Dravya sevana* (Sweet foods). Less physical activity (*Vihar*)-*Asya-Sukham*-sedentary lifestyle, *Swapna-Sukham* excessive sleep, *Avyayam*-reduce physical exercise, *Achinta*- lack of any tension<sup>6</sup>.

## 1. FLOW CHART OF AYURVEDIC PATHOLOGICAL COMPONENT IN DIABETIC NEUROPATHY





## AYURVEDIC COMPONENT

*Dosha- Tridosha (Special Vyana Vata and Tarpaka Kapha).*

*Dooshya- Rasa, Rakta, Mamsa, Meda, Kleda, Majja, Oja, Shukra, Meda and Mamsa).*

*Status of Agni- Decrease level of Jatharagni, Dhatvagnis, and Bhootagnis*

*Site of Ama formation – At the level of Jatharagni, Dhatvagnis, and Bhootagnis.*

*Involvement of Srotasa-Specially Rasavaha, Mamsavaha, Medovaha, Mootravaha*

*Srotodushti- Atipravritti and Sanga*

*Adhisthana- Initially in Shakha and later in Koshta, Marma, Asthi, and Sandhi*

*Pratyatma Lakshana-  
Prabhootavilamootrata, Shuptata*

*(Tingling sensation, numbness, etc.)*

*Sancharasthana- Sarvanga Sharira via, Nadi, Sira, Dhamani, Rasayanee*

*Roga Marga- Abhyantara and Shakha Pradesh*

*Vyadhi Svabhava – Chirakari*

*Sadhy - Asadhyata - Kaphaja-Sadhy, PittajaYapya, Vataja-Asadhy<sup>7</sup>.*

## CLINICAL PRESENTATION OF DIABETIC NEUROPATHY:-

Patients exhibit classic characteristics of diabetic neuropathy coupled with polyuria, polydipsia, and polyphagia. There seem to be four kinds of diabetic neuropathy, and the

symptoms change depending on which nerves are afflicted. **Peripheral neuropathy:** causes damage in the hands and arms before damaging the upper and lower limbs. Patients typically experience tingling (*Ppilika saccharin*), burning (*KarpadyoDaha*), and numbness (*Suptatta*)<sup>8</sup> in their hands and feet. **Autonomic neuropathy:** The bladder, heart, intestines, stomach, sex organs, and eyes are all under the autonomic nervous system's control. High blood sugar levels can disrupt this system and resulting in: Bladder issues, which increase the frequency of urination, Excessive sweating, increased palpitations, impaired sexual response, double vision, loss of appetite, constipation, and diarrhoea. **Proximal neuropathy:** Affects the chest area, buttocks, abdominal region, legs, hips, or thighs. The symptoms typically start from one side of the body and extend to the other. It can just be a persistent problem getting out of a sitting position that eventually manifests as hip or thigh pain. Even the stomach may complain of severe pain, and the thigh muscles shrink, making walking difficult. **Mono neuropathy:** When a particular nerve is injured, mono neuropathy or focused neuropathy results. This could

present as tingling in the hands, trouble focusing, double vision, and a lack of gripping power in the hands.

### DIAGNOSTIC CRITERIA OF DIABETIC NEUROPATHY:-

Broadly divided into two Part 1. Clinical diagnosis 2. Laboratory diagnosis:

1. Clinical diagnosis: It is mainly based on the classical symptoms of diabetes and symptoms related to diabetic neuropathy such as Polyuria, polydipsia, polyphagia, numbness & pain in the extremities, impotency, incontinence of urine, blurred vision, nephropathy, ulceration, dementia,

cognitive impairment, etc. If neuropathy is suspected after preliminary examination, check superficial and deep reflexes to determine the degree of the problem, Test the ability to Sense vibrations in the foot, Nerve conduction study, Electromyography, C- reactive protein, etc.

2. Laboratory diagnosis: The American Diabetes Association requires the presence of one of the following criteria for the diagnosis of diabetes (ADA-2016)<sup>9</sup>.

**Table no.1 Diagnostic criteria of Diabetes Mellitus according to ADA**

Result	HbA1C	Fasting plasma glucose	Oral glucose tolerance test
Normal	<5.7%	<100mg/dl	<140mg/dl
Pre-diabetes	5.7-6.4%	100-125mg/dl	140 to 199mg/dl
Diabetes	>6.5%	>126mg/dl	>200mg/dl

< 1% rise in the HbA1c= 1.7mmole/l (30mg/dl) increase in the mean glucose load

Other lab tests in elderly diabetics include CBC, ESR, serum lipids, urine tests for glucose, protein, and ketone bodies, and microscopic examination for pus cells. These tests are routinely carried out in symptomatic individuals to assess the therapeutic response and other related complications. Serum creatinine, blood urea, etc.

**MANAGEMENT OF DIABETIC NEUROPATHY:** *Sankshepatah kriya yoga nidanam parivarjanam.* (S.U.I/25). The first and foremost principle of Ayurveda is the avoidance of causative factors. In Diabetic Mellitus avoid a sedentary lifestyle, bad food habits, mental stress, day sleep, and awakening at night.

Ayurvedic drugs not only have the anti-diabetic property (*Pramehaghna*) but also have *Rasayana*, *Ojovardhaka*, *Jívaneeya*, and *Balya* properties. These properties of Ayurvedic drugs alone or in combination with modern medicine, can reduce the insulin as well as oral hypoglycemic drug requirement, prevent or delay long-term complications, and maintain overall health in elderly diabetics.

**AHARA-** Diet is an essential regimen for the control of blood sugar. The role of diet in the management of diabetes mellitus has the same importance as it was thousands of years back. *Katu*, *Tikta*, *Kashaya* *Rasa*, *Ushna*, *Laghu*, *Rooksha* properties of food are prescribed for diabetes. Food avoided a diabetic patient like alcohol, milk, curds, oil,

Ghee, sweets, and meat of animals which are residing in water or near water should be avoided. Foods like *Yava* (barley), bitter, pungent, and astringent vegetables, the meat of animals residing in hot climates (*Jaangal Pradesh*), and pulses/cereals like-*Shyamaka*. *Kodrava*, *Uddalaka*, *Godhooma*, and *Kulatthi Aarhar* are to be taken by all patients of diabetes mellitus<sup>10</sup>. **VIHARA**- The role of exercise has been emphasized by *Acharya Sushruta* in the management of poor and rich diabetic patients. For poor patients- there is an indication of light exercise and earning their living by begging. For rich patients – there is an indication of heavy exercise and earning their living by begging.

Recent evidence shows that exercise, meditative *Asanas* & lifestyle management not only improve hyperglycemia but are also believed to improve pancreatic and liver functions. Regular walking, yoga, and exercising can help keep the body flexible and improve strength in muscle

#### **AYURVEDIC FORMULATION:**

Several herbal and herbo-mineral Ayurvedic drugs are advocated for the treatment of *Prameha* in general. Drugs having *Katu* (pungent), *Tikta* (bitter), and *Kashaya* (astringent) *Rasa* are indicated in all types of *Prameha*, i.e. diabetes and its related complications.

**Table no.2 Ayurvedic Herbo-Mineral Formulation**

<i>Herbal drugs</i>	<i>Mineral drugs</i>	<i>Herbo-mineral preparation</i>
<i>Vijayasar, Daruharidra</i> <i>Amalaki, Triphala kwath,</i> <i>Faltrikadi kwatha, Nimba,</i> <i>Mamajjaka<sup>11</sup>,</i> <i>Guduchi,</i> <i>Jamboo, Bilvapatra, Tejapatra,</i> <i>Karvellaka, Bhoomyamalaki</i>	<i>Shilajatu<sup>12</sup>,</i> <i>Svarnamaksheeka<sup>12</sup>,</i> <i>Shivagutika,</i> <i>Trivanga Bhasma,</i> <i>Naga, Vang Bhasma</i>	<i>Basantkusamakararasa,</i> <i>Pramehantaka Vati,</i> <i>madhumehari churana,</i> <i>Chandraprabha Vati<sup>13</sup></i>
<i>Promotion of Ojas or immune status- drugs having Rasayana, Jivaniya and Pramehaghna properties-, Shilajatu, Svarnamakshika, Nisha, Amalaki</i>		
<i>Promotion Agni.- Pippali, Maricha, Chitraka, Shunthi, Bhallatak</i>		

Ayurvedic herbs such as:

1. *Karela* has anti-diabetic properties, and it can lower blood glucose
2. *Ashwagandha* helps lower blood pressure levels in the body and is very good at dealing with diseases.
3. *Gudmar* (Gymnema Sylvestre) helps reduce cravings for sugar, and lowers glucose levels in the blood.
4. Cinnamon, *Tulsi*, and black pepper are extremely helpful in keeping immunity high.

**DISCUSSION:** Ayurveda One of the varieties of *VatajPrameha* has been discussed, and that is *Madhumeha*. All of the Ayurvedic *Samhitas* state that *Prameha* converges into *Madhumeha* if left untreated. The pathophysiology of *Madhumeha* owing to vitiated *Vata* caused by *Dhatukshaya* and another due to vitiated *Dosha* causing *Vataprakop* were both described by *Acharya Vagbhat*. In the *Sutrasthan*, *Charakacharya* described the particular causes and *Samprapti* of

*Madhumeha*. It is obvious that *Santarpanotthajanya* & *Kapha* are the main *Hetu*, and that excessive elevations in *Meda* and *Mamsa Pitta* lead to *Margavarodh* of *Vayu*. The vitiated *Vata* releases the *Dhatu*, *Oja*, into the *Basti* or *Mootravahasrotas* from the body. The above level meets the ADA's diagnostic guidelines when a patient has the typical signs of hyperglycemia or a hyperglycemic emergency. Numerous consequences can result from untreated diabetes. The episodic presentations of the patients' symptoms includes numbness (*Suptatha*), tingling (*Ppilika Sancharavath*), and burning (*Daha*) sensations. In this *Vaydhi*, *Avarana* is one of the *Sampraptis* where *Kapha* will perform the *Avarna* of *Vata* and *Pitta*, respectively. The treatment's primary goal is to break down the *Samprapti*. The patient took herbal, herbomineral, and classical medications which function as *Rasayana* for *Mutravahastrotasa* and have *Pramehaghna* qualities. These medications reduce *Kapha*, *Pitta*, *Dhatushaithilya*, and *Kleda*. *Gudmar* contain gymnemic acids, which have been demonstrated to lessen the absorption of sugar from the gut. The body's insulin levels may also rise as a result of these substances. Due to the removal of blockages in the blood vessels caused by *Tikta-Katurasa*, *Ushnaveerya*, *Katuvipaka*, and *Laghu* of *Haridra*, easy blood and nutrient circulation.

**CONCLUSION:** Diabetic Mellitus is a metabolic disease that can be prevented through lifestyle modification by controlling of bad food habits, overweight, and obesity. According to *Ayurved Prameha Anusanginam*, continuous *Prameha* led to conversion in *Madhumeha Roga* (Diabetes Mellitus). Continuing high levels of Plasma glucose level can lead to

many complications like most common diabetic neuropathy. *Ayurvedic herbal, herbomineral*, drugs reduce plasma glucose level, *Ojovardhaka*, and *Jívaneeya* increase rejuvenating effect, and removes blockages in the blood vessels hence making the circulation of blood and nutrients easy to control nerve damage.

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