



# Impact of Ayurvedic Formulations on Management of Type II Diabetes Mellitus - A Case Report

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## Abstract :-

Type 2 diabetes mellitus presents a persistent health challenge that demands innovative strategies to enhance wellness, necessitating a multifaceted approach to treatment. Diabetes is rapidly becoming one of the most prevalent diseases in today's world. Its global escalation suggests a strong connection with lifestyle and dietary habits. Moreover, diabetes is characterized by a preclinical phase that may be reversible if its underlying causes are comprehensively understood and addressed. However, experiences in managing diabetes have thus far shown limited success in both preventing its occurrence and mitigating its complications. This case report specifically explores a group of drugs, and its potential in treating diabetes mellitus, a debilitating global disease associated with substantial economic burden. There is limited published literature available documenting the efficacy of Ayurvedic interventions in managing diabetes mellitus. This report discusses a case where successful reversal of diabetes mellitus was achieved in a patient. This case report highlights the effectiveness of Ayurvedic intervention in managing diabetes mellitus. Although limited in scope as a case report, it underscores the potential for further research and advancements in clinical practice within Ayurveda.

**KEYWORDS :-** Antidiabetic, Ayurvedic formulations, diabetes mellitus, ayurvedic management.

## INTRODUCTION :

Prameha, a clinical condition marked by excessive cloudy urination, is broadly known as Prameha. It is categorized into twenty subtypes depending on Dosha involvement and urine characteristics. Over time, all types of Prameha eventually transform into Madhumeha, which is diabetes mellitus. The management of type 2 diabetes mellitus (T2DM) involves the use of oral hypoglycemic drugs initially, progressing to insulin in advanced stages. However, medication side effects and complications of T2DM itself contribute to worsening the condition. Globally, there is a quest for safe and effective treatments to prevent and manage T2DM. Prameha is a disease caused by factors such as Mandagni (low digestive fire and metabolism), Bahudosha (excessive Dosha), Bahudravashleshma (increased Kapha with liquidity), and Abaddhameda (increased triglycerides and bad cholesterol), accompanied by an accumulation of Kleda (excessive fluidity) in the body. These factors belong to the Kapha substance group in the body.

**Prevalance :**

The estimates in 2019 showed that 77 million individuals had diabetes in India, which is expected to rise to over 134 million by 2045. Approximately 57% of these individuals remain undiagnosed. Type 2 diabetes, which accounts for majority of the cases, can lead to multiorgan complications, broadly divided into microvascular and macrovascular complications. T2DM accounts for more than 90% of diabetes cases in adulthood.

**Causative factors :**

According to Ayurvedic Samhita, a beej defect is the cause of Sahaj Prameha. Bahu Drava Shleshma is the term used in Prameha dushta Kapha to refer to an increase in Drava Guna of Kapha. The Acharya Charak has provided an explanation of Prameha in Ashtomahagad. Prameha is an illness that is caused by unhealthy lifestyle that is life-threatening. Ahar-vidhi-visheshayatana, Dincharya, Ratricharya, Ritucharya, and other healthy lifestyles are described in ayurveda texts but Pradnya-aparadha causes a lack of self-control, which encourages the adoption of an unhealthy lifestyle and, in turn, lifestyle illness.<sup>[1]</sup>

Prameha belongs to the Santarpan Janya Vyadhi caste. Dosha Dushya Sangraha (Prameha) is as follows: Pitta, Vata, Kapha. Dushya is entangled with Rasa, Rakta, Mansa, Meda, Majja, Shukra, Oja, Ambu, Vasa, and Lasika. Every Dushya falls under the Kapha group, with the exception of Raktadhatu. Important Dushyas, Meda and Mamsa are required to participate in all forms of Prameha. Both Meda and Mamsa Dhatu are peculiar in that they are Abadha (loosely bonded or aghana, meaning flabby) and Bahu (excess in amount). It is impossible to recommend Nidan Parivarjan to a patient without a thorough understanding of Hetu sevan and Dosha Dushyas Sangraha.<sup>[2]</sup> Also in T2DM patients, higher stress levels are linked to worse glycemic control and medication noncompliance.<sup>[3]</sup>

In order to guarantee an efficient care of the illness, patients must make significant lifestyle changes in addition to receiving interventions through pharmaceutical methods. These consist of adjustments to one's diet, behaviour alterations related to physical exercise, stress management, and better sleep hygiene. These methods have been an effective strategy for managing the long-term effects of diabetes.

**CASE HISTORY**

A 38 year-old male was evaluated in the diabetes OPD of KLE Ayurveda hospital Belagavi, Karnataka for hyperglycemia. Patient was apparently healthy 2 weeks back later developed Prabhootha mutrata with Pipasativridhi which was followed by Karapaada daaha, It was insidious in onset and gradually developed weight loss of 13kg over a 6 -month period. The symptoms were progressive in nature, associated with shareera durbalata. He presented with history of diabetes mellitus since 2 weeks and was under medications (Tridort 1 OD). The patient has discontinued the earlier allopathy medication and approached our hospital for Ayurveda line of management. No history of hypertension or any other major illness was noted. Rogi pareeksha were recorded as shown in table 1,2 and 3.

**Table 1 : General physical examinations**

Height	177cm
Weightht	85 kg
BMI	27.1kg/m <sup>2</sup>
Blood Pressure	130/80mmHg
Pulse Rate	78bpm

**Table 2 : Dashavidha Pareeksha**

Prakruti	Pittakapha
Vikriti	Kaphaja
Sara	Madhyama
Samhanana	Madhyama
Pramana	Madhyama

Satmya,	Madhyama
Satva,	Madhyama
Aahara Shakti	Madhyama
Jarana Shakti	Madhyama
Vaya	Madhyama

**Table 3 : Ashtavidha Pareeksha**

Nadi	Pittakapha Nadi
Mutra	Vikruta (2-3 times/day in night)
Mala	Once in a Day
Jivha	Alipta
Shabda	Prakruta
Sparsha	Prakruta
Druk	Prakruta
Akrutti	Madhyama

**Table 4 : Timeline for treatment protocol and investigations**

S No	Date	Investigations	Treatment
01	17/03/2024	FBS :- 180mg/dl PPBS :- 289mg/dl HbA1C :- 15.6% Urine Sugar :- +++(Brown) Total Cholestrol :- 256* HDL-Cholestrol :- 46 LDL-Cholestrol :- 118 Triglycerides :- 200* VLDL:- 40* Total Cholestrol / HDL Ratio :- 5.5 LDL/HDL Ratio :- 2.5	Cap Nishamlaki 1 TID Tab C P Vati 2 TID Tab Arogyavardini rasa 2 TID Mehaabhayadi Kashaya 3tsp TID (for 1 week)
02	23/03/2024	FBS :- 160mg/dl PPBS :- 240mg/dl Urine Sugar :- +++(Brown)	Cap Nishamlaki 1 TID Tab C P Vati 2 TID Tab Arogyavardini rasa 2 TID Mehaabhayadi Kashaya 3tsp TID (for 1 week)
03	30/03/2024	FBS :- 143mg/dl PPBS :- 234mg/dl	Cap Nishamlaki 1 TID Tab C P Vati 2 TID Tab Arogyavardini rasa 2 TID Mehaabhayadi Kashaya 3tsp TID (for 1week)
04	06/04/2024	FBS :- 113mg/dl PPBS :- 127mg/dl	Tab Goranchi 1 TID Tab C P Vati 2 TID Tab Arogyavardini rasa 2 TID Mehaabhayadi Kashaya 3tsp TID (for 15 days)
05	20/04/2024	FBS :- 102mg/dl PPBS :- 117mg/dl HbA1C :- 9.0% Urine sugar :- +(Green)	Tab Goranchi 1 TID Tab C P Vati 2 TID Tab Arogyavardini rasa 2 TID Mehaabhayadi Kashaya 3tsp TID (for 15 days)

06	04/05/2024	FBS:- 105mg/dl PPBS :- 128.88mg/dl	Tab Goranchi 1 TID Tab C P Vati 2 TID Tab Arogyavardini rasa 2 TID Mehaabhayadi Kashaya 3tsp TID (for 15 days)
07	18/05/2024	FBS:- 78mg/dl PPBS :- 108mg/dl Urin sugar :- Nil	Tab Goranchi 1 TID Tab C P Vati 2 TID Tab Arogyavardini rasa 2 TID Mehaabhayadi Kashaya 3tsp TID (for 1 month)
08	15/06/2024	FBS :- 78mg/dl PPBS:- 100mg/dl HbA1C :- 6.7% Total Cholestrol :- 200 HDL-Cholestrol :- 40 LDL-Cholestrol :- 108 Triglycerides :- 150 VLDL :- 30 Total Cholestrol/HDL Ratio :- 5.0 LDL/HDL Ratio :- 2.7	Tab Goranchi 1 TID Tab C P Vati 2 TID Tab Arogyavardini rasa 2 TID Mehaabhayadi Kashaya 3tsp TID

## OBSERVATIONS :-

As recorded in table 4, there was significant difference observed in blood parameters, which implies that the advised shamana aoushadhis along with modified lifestyle changes are effective in managing type 2 diabetes mellitus.

## DISCUSSION :-

**1. Chandraprabha vati :** The term 'chandraprabha' refers to a medicinal formulation that includes various substances such as karpūra (camphor), sathī or śatāvārī, bhūnimba (kairāta), amṛtā (guḷūcī or gudūcī), dāruka (devadāru or amaradāru), dārvī (dāruharidrā), vyoṣa (trikaṭu), māḷśīkadhātu (suvarṇamāḷśīka), and others. The formula also includes svarjīkā kṣāra and yavaḷśāra as well as rocksalt, sauvarchal, and vida salts.<sup>[4]</sup> Chandrapabha Vati (CPV) is mainly Tridoshaja, more commonly vatakapha shamaka, medohara, vrushya and mutrala in nature. On analyzing the indications and properties this Vati acts on Rasa, Rakta, Mamsa, Medas, Asthi, Majja, Shukra Dhatu.<sup>[5]</sup> A study indicates that CPV demonstrates anti-hyperglycemic effect and reduces the glycation-related increase in lipid profile levels.<sup>[6]</sup> Another study showed that CPV exhibited reductions in cholesterol and triglyceride levels. This effect is likely attributable to the hypocholesterolemic plant constituents and minerals such as guggulu (Commiphora wightii), musta (Cyperus rotundus), shilajit (Asphaltum punjabianum), present in CPV. These components may act as inhibitors of enzymes like hydroxyl methyl glutaryl CoA reductase, involved in cholesterol synthesis, or reduce cholesterol absorption from the intestine.<sup>[7]</sup> A study demonstrated decrease in triglyceride levels after intake of CPV which suggests that CPV may enhance insulin activity, thereby normalizing the function of lipoprotein lipase. This highlights the antihyperlipidemic effects of CPV.<sup>[8]</sup>

These findings provide additional evidence supporting the clinical use of Chandraprabha vati for managing Prameha.

**2. Arogyavardini vati :** According to Rasaratnasamucchaya, Arogyavardhini vati is described as Sarvarogaprashamani, indicating its efficacy in alleviating various disorders. This traditional Ayurvedic formulation has been used for centuries with claimed effectiveness and safety in treating conditions such as jaundice, liver disorders, skin diseases, leprosy, fever, edema, obesity, lack of appetite, indigestion, and irregular bowel movements. It functions as an alternative medicine and aids in digestion as well.<sup>[9]</sup> The

medication is highly beneficial for conditions like cirrhosis of the liver, jaundice, and impaired liver function. It is also effective in treating various types of acne. Arogyavardhini promotes overall health, balances the three Doshas (humours), and is beneficial for conditions such as leprosy, edema, obesity, and various liver disorders. A double-blind trial conducted by Antarkar et al. (1980) demonstrated significant hepatoprotective effects of Arogyavardhini vati in acute viral hepatitis.<sup>[10]</sup> This formulation is utilized to address imbalances in all three Doshas (humours). The medication has been referenced in the Rasa ratna samucchaya for treating Kustha (skin disorders) and in the Bhaishyajaratnavali for addressing Yakritvikara (liver disorders). According to Rasa ratna samucchaya, Arogyavardhini vati is described as Sarvarogaprashamani, indicating its efficacy in alleviating various disorders. This traditional Ayurvedic formulation has effectiveness and safety in treating conditions such as jaundice, liver disorders, skin diseases, leprosy, fever, edema, obesity, lack of appetite, indigestion, and irregular bowel movements. It functions as an alternative medicine and aids in digestion as well.<sup>[11][12][13][14][15]</sup>

The medication is highly beneficial for conditions like cirrhosis of the liver, jaundice, and impaired liver function. It is also effective in treating various types of acne. Arogyavardhini promotes overall health, balances the three Doshas (humours), and is beneficial for conditions such as leprosy, edema, obesity, and various liver disorders. A double-blind trial conducted by Antarkar et al. (1980) demonstrated significant hepatoprotective effects of Arogyavardhini vati in acute viral hepatitis. Additionally, the medication aids individuals suffering from indigestion and irregular bowel movements, enhances digestive power, and acts as a tonic for organs such as the liver, heart, kidneys, uterus, rectum, and intestine. It alleviates chronic fevers, reduces water retention, and decreases inflammation in organs including the spleen, liver, bladder, kidneys, uterus, and intestines. Long-term use of Arogyavardhini vati benefits the functioning of endocrine glands, promoting balanced growth of the body and organs. It helps in removing excess fat, clearing toxins, and reducing accumulated cholesterol. The medication has shown effectiveness against various types of hepatitis (A, B, or C) and supports a healthy digestive system along with the circulatory, respiratory, excretory, reproductive, and skeletal systems. Furthermore, Arogyavardhini vati proves beneficial in managing diarrhea, dysentery, and various body aches. It strengthens the heart muscles, treats inflammatory conditions of the intestines, enhances digestive processes, and facilitates the distribution of nutrients to tissues. By balancing fats and eliminating toxins, it improves overall digestive health.<sup>[16][17][18][19]</sup>

**3. Cap Nishamalaki :** Nishamalaki comprises various formulations combining Haridra (turmeric) and Amalaki (Indian gooseberry). It is clinically effective in managing conditions such as Madhumeha (diabetes mellitus) and Prameha (urinary disorders related to diabetes). Nishamalaki exhibits antihyperglycemic, antidiabetic, insulinomimetic,  $\alpha$ -amylase inhibitory, and  $\alpha$ -glucosidase inhibitory properties, along with antioxidant effects. It enhances insulin sensitivity, promotes glucose uptake by skeletal muscles, and proves beneficial in the treatment of diabetes, including the prevention of associated complications. Nishamalaki comprises various formulations combining Haridra (turmeric, *Curcuma longa*) and Amalaki (Indian gooseberry, *Emblica officinalis* Gaertn). It is highly effective in managing Madhumeha, Prameha, and diabetes clinically. Both Haridra and Amalaki are noted in literature for their extensive benefits in both healthy and diseased states, recognized particularly for their rejuvenating (Rasayana) properties. They are considered the preferred choice in managing Prameha (diabetes), with Amalaki recommended as a dietary intervention for its treatment. Numerous studies have investigated Nishamalaki, Haridra (*Curcuma longa*), and Amalaki (*Emblica officinalis* Gaertn) extracts and their chemical constituents for their effects on diabetes mellitus, including complications such as diabetic nephropathy, neuropathy, retinopathy, gastropathy, and macrovascular issues like atherosclerosis. Nishamalaki exhibits antihyperglycemic, antidiabetic, insulinomimetic,  $\alpha$ -amylase inhibitory,  $\alpha$ -glucosidase inhibitory, and antioxidant properties. It enhances insulin sensitivity, promotes glucose uptake by skeletal muscles, and plays a significant role in managing diabetes and its associated complications affecting multiple systems and organs.<sup>[20]</sup>

**4. Meha Abhayadi Kashaya (SDM Product) [Asanadi kashayam] :** asanadi gana kashaya is mainly kapha hara, kapha shoshana. It is rasa-twak-varna prasadaka, durmedohara, sthoulya hara, pramehaghna, kleda hara. It is highly effective for sthula pramehi. It is one of the best kashaya aoushadha for weight reduction. Dravya of this gana exhibit varying degrees of hypoglycemic, hypolipidemic, and antioxidant activities. The antidiabetic effects are attributed to polyphenols, terpenoids, alkaloids, flavonoids, glycosides, and other active constituents, which contribute to lowering blood glucose levels. Some dravya of this gana affect pancreatic  $\beta$ -cells by enhancing insulin release or promoting  $\beta$ -cell regeneration, while others improve insulin

sensitivity or demonstrate insulin-like activity. Additional mechanisms include enhancing glucose homeostasis through increased peripheral glucose utilization and hepatic glycogen synthesis, inhibition of intestinal glucose absorption, reduction of the glycemic index of carbohydrates, and modulation of glutathione effects.<sup>[21]</sup>

**5. Tab Goranchi (Sagar pharmaceuticals) :** Goranchi tablets contain a combination of ingredients such as Madhunashini (*Gymnema sylvestre*) leaf and root, Jambuphala (*Syzygium cumini*), Amalaki (*Phyllanthus emblica*), Haridra (*Curcuma longa*), and Shilajatu. This formulation is Tridoshahara, meaning it balances all three doshas. Many of these ingredients possess Mehadhara Karma, helping to manage blood sugar levels, and they also enhance digestive fire while providing antioxidant properties.<sup>[22]</sup>

## CONCLUSION :-

Diabetes mellitus arises from a metabolic disorder characterized by a relative or absolute deficiency of insulin or insulin resistance at the cellular level. This review article explores the antidiabetic properties of ayurvedic formulation. In this present study, it can be concluded that Ayurvedic management is better achieved by following the proper dietary food habits, lifestyle along with Shamana Aushadi. The holistic approach of Ayurveda utilising the above concept will definitely pay the way not only to control the blood sugar level but also to prevent the complications caused by this illness.

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