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Case Study

Management of Prameha (Type 2 Diabetes Mellitus) with Ayurveda Formulations as Adjuvant Therapy: A Case Report

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Abstract

Introduction: Prameha, described in Āyurveda as a tridoṣaja and medo-pradoṣaja disorder, shares close clinical correlation with Type 2 Diabetes Mellitus (T2DM). It is characterized by polyuria or turbid urine (prabhūta/avila mūtra) and is associated with unhealthy dietary habits (apathya-sevana), sedentary lifestyle, and hereditary predisposition (sahaja hetu).

Case Information: A 37-year-old woman with a 10-year history of T2DM was receiving conventional therapy comprising high-dose insulin (54 units/day) and oral hypoglycemic agents. Despite ongoing treatment, she had persistent polyuria (bahu-mūtratā), weakness (daurbalya), and burning sensation in the feet (pāda-dāha).

Intervention: An integrative regimen comprising Paṭolakaturohiṇyādi kaṣāya tablets, Triphala guggulu, and Madhumeharī cūrṇa was prescribed alongside dietary and lifestyle modifications, while conventional therapy was continued initially and tapered gradually.

Results: Over five months, HbA1c reduced from 8.5% to 6.1%, fasting blood glucose normalized, symptoms resolved, and insulin was discontinued. Oral hypoglycemic doses were also reduced.

Conclusion: This case demonstrates the potential of Āyurvedic formulations as adjuvant therapy in the integrative management of T2DM, enabling reduction of pharmacological dependence and improvement in quality of life.

Keywords: Prameha, Āyurveda, Type 2 Diabetes Mellitus, Madhumeharī cūrṇa, Triphalā guggulu, Paṭolakaturohiṇyādi kaṣāya

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Introduction

Prameha is a metabolic disorder described in Āyurveda, primarily characterized by prabhūta-avila-mūtratā (excessive and turbid urination).[1] It is classified into twenty types based on the presenting lakṣaṇa (clinical features). Pathogenesis involves ten duṣya (susceptible substrates),[2] with predominant involvement of medas (adipose), māṃsa (muscle), and kleda (fluid milieu). In this condition, the dhātu remain in aparipakva-avasthā (improperly formed state) or āmāvasthā, owing to agnimāndya.[3][4] The nidāna (etiological factors), particularly improper diet and sedentary lifestyle, play a crucial role in the manifestation and progression of the disease.[5]

Prameha is clinically correlated with Diabetes Mellitus, a lifestyle disorder marked by persistent hyperglycaemia,[6] which often results from insulin resistance, impaired insulin secretion, or both. With the growing burden of sedentary lifestyles, irregular dietary habits, and stress, the prevalence of diabetes has risen significantly, making it a major public health concern globally. Diabetes mellitus is classified into several types, with the two main types being Type 1 and Type 2. In Type 1 diabetes, the body is unable to produce sufficient insulin, while in Type 2 diabetes the body develops resistance to insulin. Another form, known as gestational diabetes, occurs during pregnancy when the body cannot produce enough insulin to meet the increased demands associated with pregnancy.[7] The emerging role of inflammation in both Type 1 and Type 2 diabetes (T1D and T2D) pathophysiology and associated metabolic disorders has generated increasing interest in targeting inflammation to improve prevention and control of the disease.[8] This report presents a T2DM case where Āyurvedic formulations were integrated into ongoing conventional therapy, resulting in improved glycaemic control and reduced drug dependency.

Patient Information

A 37-year-old married female, working as a Chartered Accountant, presented to the Madhumeha unit OPD at the National Institute of Ayurveda (Deemed to be University), Jaipur, with complaints of generalized weakness (daurbalya), increased frequency of urination (abhikṣṇa-mūtratā), and burning sensation in the feet (pāda-dāha). She was diagnosed to have gestational diabetes mellitus in 2015, which persisted as T2DM after delivery of the baby. She was being managed with insulin and oral hypoglycaemic drugs by an allopathic physician. There was no significant family history of diabetes or other major illnesses.

Clinical Findings

Her general and systemic examinations were within normal limits. The height was 157 cm and weight 54 kg, resulting in a Body Mass Index (BMI) of 21.9 kg/m², with pulse 80/min, respiratory rate 18/min, and blood pressure 110/70

mmHg. Based on classical clinical assessment, the patient had a dual prakṛti (constitution), identified as kapha-vātaja. The sāra (overall quality of bodily tissues), saṃhanana (compactness of physique), and pramāṇa (body proportions) were all assessed as madhyama (moderate). Similarly, her sattva (mental constitution and resilience) and sātmya (adaptability to foods and routines) were also of moderate nature. Her āhāra-śakti (capacity for digestion and assimilation) and koṣṭha (bowel habit) were madhyama (moderate). Vyayāma-śakti (physical stamina and exercise capacity) was avara (low).

Table 1: Timeline of Events

Date/ Visit	Complaints	Lab Reports	Conventional Therapy	Āyurvedic Treatment	Outcome
3 Dec 2024	Daurbalya, Bahumūtrata, Padadāha	HbA1c: 8.5% FBS–165 mg/dL PPBS–256 mg/dL	Insulin 12 U TID + 18 U HS + OHAs (Dapagliflozin 10 mg OD AF + Gliclazide 40 mg TID BF + Metformin 500 mg/Sitagliptin 50 mg BID)	Paṭolakaturohiṇyādi Kaṣāya Tablet 500 mg BID, after meals with water; Triphalā Guggulu 500 mg BID, after meals with water; Madhumeharī Cūrṇa 5 g BID, before meals with lukewarm water	Initiation of integrative therapy
7 Jan 2025	Mild relief in Daurbalya, Bahumūtrata	FBS–146 mg/dL PPBS–226 mg/dL	Insulin 8 U BID + 15 U HS + OHAs as above	Same as above	Insulin reduced, complete relief in Padadāha
4 Feb 2025	Marked relief in complaints	FBS–122 mg/dL PPBS–176 mg/dL	OHAs only as above	Same as above	Insulin discontinued
4 Mar 2025	No new complaints	FBS–105 mg/dL PPBS–142 mg/dL	OHAs only as above	Same as above	Symptom-free
1 Apr 2025	No new complaints	HbA1c: 6.10%, FBS: 75.51 mg/dL PPBS–130 mg/dL	Reduced OHA dose (Metformin 500 mg/ Sitagliptin 50 mg BID)	Same as above	All parameters improved

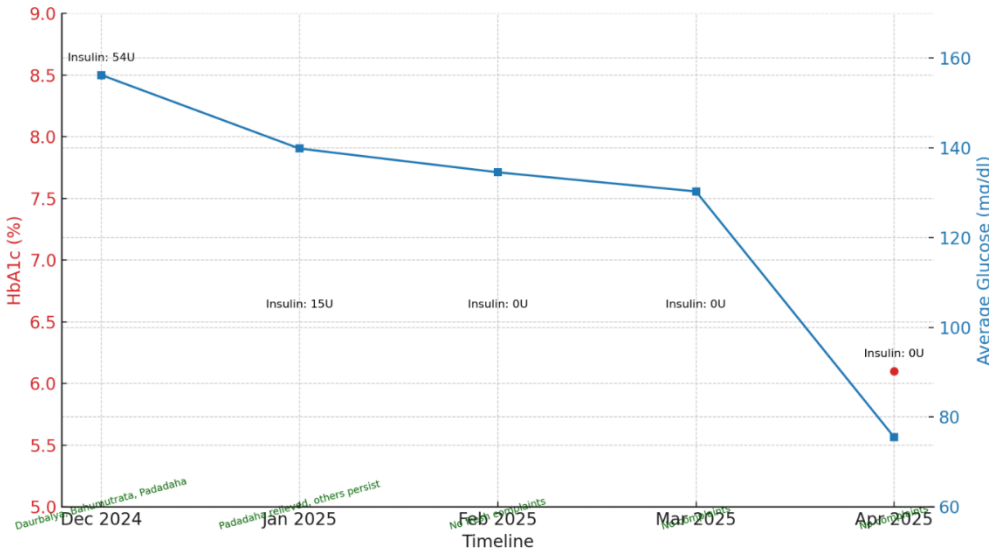
Diagnostic Assessment

Laboratory investigations showed random blood sugar (RBS) above the normal range, along with elevated HbA1c levels, confirming poor glycaemic control. Other routine parameters, including renal and liver function tests and urinalysis, were within normal limits. Differential diagnosis excluded urinary tract infection with the help of urinalysis. A thorough physical examination ruled out the presence of

complications, including skin eruptions, ulcers, or inflammatory changes.

The diagnosis of Prameha was made based on Āyurvedic clinical criteria. Considering the kāla (duration) of the disease, associated lakṣaṇas (symptoms), and the overall condition of the patient, the clinical presentation indicated the involvement of all three doṣas, with a predominance of kapha and pitta.

Image 1: CARE-Compliant Case Timeline: Symptoms, HbA1c, and Therapy Adjustments



Therapeutic Intervention

The patient was already undergoing conventional therapy consisting of insulin along with a combination of oral hypoglycaemic agents including Dapagliflozin (10 mg), Gliclazide (40 mg), and Metformin/Sitagliptin (50/500 mg). When she visited our OPD, Āyurvedic interventions were introduced, which included Paṭolakaturohiṇyādi Kaṣāyaṁ tablets (2 tablets twice daily after food), Triphala Guggulu (500 mg twice daily after food), and Madhumeharī Cūrṇa (5 g twice daily before food).

This integrative approach combined modern pharmacological management with traditional Āyurvedic formulations for better glycaemic control and overall health improvement. The Āyurvedic management focused on pacifying aggravated kapha–pitta doṣa, correcting agni, and reducing meda dhātu duṣṭi.

The patient was advised a kaphahara and medohara diet (which included millet–barley flour, different pulses, and green vegetables), regular physical activity, and avoidance of incompatible foods (viruddha āhāra). The patient was encouraged to engage in daily moderate physical activity, such as regular walking, along with maintaining adequate hydration and following a regulated sleep routine. These changes were aimed at supporting glycaemic control, improving

metabolism, and promoting overall well-being.

Follow-up and Outcomes

On follow-up, significant improvements were observed in the patient's clinical status. Glycaemic control showed marked progress, with HbA1c reducing from 8.5% to 6.1% over a period of five months, and fasting blood glucose levels returning to normal range. Insulin was discontinued, and the doses of oral hypoglycaemic agents were reduced. Symptomatically, the patient experienced complete relief from frequent urination, generalized weakness, and burning sensation in feet. Additionally, the patient reported experiencing higher energy levels, improved digestion, and enhanced exercise tolerance, which collectively contributed to an overall improvement in health and quality of life.

Discussion

This case illustrates successful integration of Āyurvedic formulations in a patient with poorly controlled T2DM on high-dose insulin. The selected Āyurvedic regimen included Paṭolakaturohiṇyādi Kaṣāya tablet, Triphala Guggulu, and Madhumeharī Cūrṇa.

All the prescribed formulations in this regimen contain multiple drugs, most of which are predominantly tikta and kaṣāya rasa dominant, with laghu and rūkṣa guṇa, uṣṇa vīrya, and kaṭu vipāka. Collectively, these attributes facilitate kapha–pitta śamana and contribute to lekhana, medohara, dīpana, and āmāpācana actions. Such properties play a vital role in correcting the underlying doṣa–duṣya saṁmūrcchanā in prameha.

Tablet of Paṭolakaturohiṇyādi Kaṣāya [9] contains Paṭola, Katurohiṇī, Candana, Mādhusrava, Guḍūcī and Pāṭhā. It was not prescribed in its decoction form due to lower palatability; hence, the tablet formulation was preferred to ensure better patient compliance. It acts as detoxifying and metabolism-correcting formulation with properties like dīpana (enhancing digestion), pācana (digestive stimulant), and kleda-śoṣaṇa (removing excessive moisture).

Paṭola (Trichosanthes dioica Roxb.) has anti-diabetic, hepato-protective, antioxidant, anti-inflammatory, antibacterial, antifungal, and wound-healing properties. It is useful in lowering cholesterol and skin diseases and acts as a laxative.[10] Katurohiṇī (Picrorhiza kurroa) shows antioxidant, anti-inflammatory, and immunomodulatory activities, most importantly hepatoprotective effect.[11]

A wide array of biological activities and potential health benefits of Candana (Pterocarpus santalinus) have been reported, including antioxidative, antidiabetic, antimicrobial, anticancer, and anti-inflammatory properties, and protective effects on the liver, gastric mucosa, and nervous system.[12] Mādhusrava (Marsdenia tenacissima) is an anti-diabetic and anti-inflammatory drug.[13] Guḍūcī (Tinospora cordifolia) is a

well-known antioxidant and has significant anti-inflammatory properties. Several studies on its extracts (viz. immunomodulatory, antihyperglycaemic, antioxidant, adaptogenic, hepatoprotective, hormone regulator, etc.) and isolated phytoconstituents (like tinosporin, berberine, jatrorrhizine, etc.) have reported that it is a preventive and curative antidiabetic herb, which are substantiated by clinical trials.[14] Pāṭhā (Cissampelos pareira L.) also has anti-inflammatory, antioxidant, hepatoprotective, and antidiabetic activity.[15]

Triphala Guggulu is recognized for its potential supportive role in managing diabetes. It consists of dried powder of fruits of three plants commonly known as Triphala (Emblica officinalis Gaertn., Terminalia bellerica Roxb., and Terminalia chebula Retz.) along with Piper longum Linn., combined with the oleo-gum resin of Commiphora wightii Arnott. This formulation is classically indicated in the treatment of bhagandara (fistula-in-ano), gulma (benign abdominal growths), śotha (inflammation) and arśa (piles).[16]

Triphala and Guggulu are believed to work synergistically to address several factors associated with the metabolic disorder. Its purported benefits range from improving blood sugar control and insulin sensitivity to offering antioxidant and anti-inflammatory effects that can help mitigate diabetic complications.[17] It is traditionally used to balance the doṣa, particularly kapha, which is often aggravated in prameha.

It is considered a rasāyana (rejuvenating) and śodhana (detoxifying) formulation that helps to cleanse the body of accumulated toxins (āma) and restore metabolic balance. By promoting healthy digestion and elimination, it aims to address the root causes of metabolic dysfunction. Studies on animal models have indicated that Triphala Guggulu may help lower blood glucose levels and improve oral glucose tolerance. This is attributed to its potential to inhibit certain digestive enzymes responsible for breaking down carbohydrates, thereby slowing down the absorption of sugar into the bloodstream.[18]

The components of Triphala Guggulu, particularly Guggulu, are believed to enhance insulin sensitivity. This means that the body's cells can utilize insulin more effectively to take up glucose from the blood, leading to better glycaemic control. Diabetes is characterized by increased oxidative stress, which can damage cells and contribute to long-term complications.[19]

Triphala is a rich source of antioxidants like vitamin C, flavonoids, and polyphenols. These compounds help neutralize harmful free radicals, thereby protecting pancreatic beta-cells (which produce insulin) and other tissues from oxidative damage.[20],[21] Dyslipidaemia, or abnormal cholesterol levels, is common in individuals with diabetes. Guggulu is

well-known for its lipid-lowering properties and may help in managing cholesterol and triglyceride levels, which are important for cardiovascular health in diabetic patients.[22] Thus, Triphala Guggulu has hypoglycaemic action and lipid-lowering activity. It enhances insulin sensitivity and possesses antioxidant properties.

Madhumeharī Cūrṇa contains Jambu (Syzygium cumini), Āmra (Mangifera indica), Kāravellaka (Momordica charantia), Meṣaśṛṅgī (Gymnema sylvestre), Methikā (Trigonella foenum-graecum), Bilva (Aegle marmelos), Nimba (Azadirachta indica), Śuṇṭhī (Zingiber officinale), Miśreyā (Foeniculum vulgare), Svarṇapatrī (Cassia angustifolia), Balā (Sida cordifolia), and Babhūla (Acacia arabica).[23]

It is specifically formulated to reduce blood glucose levels and improve pancreatic function, enhancing glucose metabolism naturally. It has already been reported to have hypoglycaemic actions.[24] Various herbs influence different stages of carbohydrate metabolism. Meṣaśṛṅgī affects taste perception by temporarily reducing the ability to taste sweetness. Jambu helps by preventing the breakdown of starch into glucose. Herbs like Āmra-sthī, Kāravellaka, and Methikā assist in reducing glucose absorption in the intestines, thereby enhancing glucose tolerance.

Certain herbs such as Meṣaśṛṅgī, Methikā, Śuṇṭhī, Balā, and Babhūla contribute to better lipid metabolism and help reduce fat accumulation. Kāravellaka supports insulin function by either lowering insulin resistance or enhancing its glycaemic effect. Methikā also slows down gastric emptying, aiding in better blood sugar control. Nimba promotes wound healing, while Svarṇapatrī is beneficial in managing skin infections along with supporting various neurological and physiological functions. Additionally, herbs like Jambu, Meṣaśṛṅgī, Bilva, Miśreyā, and Babhūla possess antioxidant properties that aid in neutralizing free radicals.[25]

The integration of Āyurvedic formulations with dietary and lifestyle modifications provided a multidimensional approach addressing doṣa imbalance, improving agni, and regulating medo dhātu. Consequently, the patient exhibited a steady decline in HbA1c from 8.5% to 6.1% over five months, normalization of fasting blood sugar levels, and significant symptomatic relief. Importantly, this improvement allowed gradual withdrawal of insulin therapy.

The integrative approach demonstrated a significant impact on the patient's health outcomes. The Āyurvedic regimen specifically targeted the balance of doṣa, enhancement of agni (digestive and metabolic fire), and regulation of medo dhātu (lipid and adipose tissue metabolism). This holistic intervention supported the gradual withdrawal of insulin while maintaining stable glycaemic

control. Potential mechanisms included reduction of oxidative stress and inflammation, which are recognized as key pathological factors in the progression of Type 2 Diabetes Mellitus (T2DM).

Patient Perspective

The patient experienced noticeable improvement in overall well-being and was happy for stoppage of insulin therapy.

Informed Consent

Written informed consent was obtained from the patient for publication of this case and accompanying clinical details.

Conclusion

Ayurvedic formulations, when integrated with conventional care and lifestyle modifications, can contribute to improved glycaemic control, symptom relief, and reduced pharmacological dependency in T2DM. Larger controlled studies are warranted to validate these findings.

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