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AYURVEDIC MANAGEMENT OF TYPE 1 DIABETES MELLITUS (MADHUMEHA): A CASE REPORT

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Abstract:

Type 1 Diabetes Mellitus (T1DM) is a chronic autoimmune condition characterized by progressive destruction of pancreatic beta cells, leading to absolute insulin deficiency. Conventional management relies entirely on exogenous insulin, as no established cure currently exists. Ayurveda classifies this condition under Sahaja Prameha or Madhumeha, offering a distinct pathophysiological framework and therapeutic approach.

Case Presentation: A 9-year-old male child presented to Patanjali Wellness Centre, Haridwar, in February 2025 as a known case of insulin-dependent Type 1 Diabetes Mellitus, diagnosed in February 2025. At presentation, he was on insulin therapy (1-1-1-3 units) with an HbA1c of 11.2% (05/02/2025). GAD-65 antibody titre was 7.31 IU/mL and fasting C-peptide was 0.65 ng/mL (19/03/2025), confirming autoimmune beta cell destruction with residual secretory function.

Intervention: The patient was enrolled in a comprehensive Ayurvedic management protocol comprising oral formulations (Divya Chiryata Kwath, Divya Giloy Kwath, Divya Madhunashini Vati Extra Power, Divya Pancogrit, Divya Immunogrit, and Divya Madhugrit), Panchakarma therapies (Nabhi Basti, Pada Abhyanga, and abdominal mud application), fruit diet/fasting therapy, yoga, and strict dietary management. Insulin therapy was gradually tapered and discontinued under close medical supervision, with continuous monitoring for glycaemic stability.

Outcome: Remarkable clinical and biochemical improvement was documented over 10 months. HbA1c declined from 11.2% (February 2025) to 6.3% (May 2025), remained at 6.8% (August 2025), and further improved to 6.0% (November 2025) — entirely without insulin. Fasting C-peptide improved from 0.65 ng/mL to 0.80 ng/mL, and post-prandial C-peptide was recorded at 1.860 ng/mL (August 2025), suggesting preserved residual beta cell function and possibly improved endogenous insulin activity.

Conclusion: This case demonstrates a significant and sustained glycaemic response to Ayurvedic management in a paediatric T1DM patient. While these findings require validation through controlled clinical studies before generalisation, this case merits further investigation into the immunomodulatory and beta cell-protective mechanisms of Ayurvedic therapy.

Index Terms - Type 1 Diabetes Mellitus, Madhumeha, Sahaja Prameha, Madhunashini Vati, Giloy, Panchakarma, C-peptide, HbA1c, Paediatric diabetes, Immunomodulation.

1. Introduction

1.1 Contemporary Perspective

Type 1 Diabetes Mellitus is a chronic autoimmune metabolic disorder characterized by selective destruction of insulin-producing pancreatic β-cells, ultimately leading to absolute insulin deficiency. Although it constitutes a smaller proportion of overall diabetes cases compared with type 2 diabetes mellitus, it remains the predominant form encountered in children and adolescents. Epidemiological observations from multiple regions of the world indicate a progressive annual increase in incidence, particularly among individuals younger than 15 years.

The disease commonly manifests with classical symptoms including excessive urination, increased thirst, excessive hunger, fatigue, and unexplained weight loss. In the absence of timely diagnosis and treatment, patients may develop diabetic ketoacidosis, a potentially life-threatening metabolic emergency. Diagnostic confirmation is generally based on persistent hyperglycaemia together with diminished endogenous insulin secretion, evidenced by reduced fasting C-peptide concentrations and the presence of pancreatic autoantibodies such as glutamic acid decarboxylase (GAD-65), islet cell, insulin autoantibodies, and IA-2 antibodies.

Current therapeutic strategies rely predominantly on lifelong insulin replacement using multiple daily injections or insulin infusion systems, accompanied by continuous glucose monitoring, nutritional planning, and structured self-management education. Despite significant advances in diabetes technology and patient care, a definitive cure for T1DM has not yet been established. Emerging modalities including immunotherapy, stem-cell-based approaches, and pancreatic islet transplantation remain under investigation and have not achieved routine clinical applicability.

1.2 Ayurvedic Interpretation (Dosha–Dushya–Samprapti)

Within Ayurvedic literature, diabetes mellitus is generally interpreted under the broader spectrum of Prameha, a group of disorders primarily involving abnormalities of urine and metabolism. Among the classical subtypes described by Charaka and Sushruta, Madhumeha bears the closest resemblance to diabetes mellitus because of its characteristic features of excessive and sweet urine.

Ayurvedic texts describe two broad aetiological categories of Prameha: (i) Apathyanimittaja, associated mainly with dietary and lifestyle factors, and (ii) Sahaja or hereditary forms. The latter has been interpreted by contemporary Ayurvedic scholars as comparable to T1DM due to its congenital predisposition, early onset, and chronic progressive nature. The concept of Beeja Dosha described in classical texts denotes inherent constitutional or hereditary defects contributing to disease susceptibility.

The pathogenesis of Madhumeha involves a complex interaction among disturbed Doshas, impaired metabolic function, and progressive deterioration of body tissues. Kapha Dosha contributes to metabolic stagnation and obstruction of physiological channels (Srotoavarodha), while aggravated Vata Dosha promotes degeneration and depletion of tissues (Dhatu Kshaya) and vital essence (Ojas). Important Dushyas implicated in the disease process include Meda, Mamsa, Rasa, Rakta, Majja, Vasa, Shukra, and Kleda. Disturbance of Agni and defective tissue metabolism (Dhatvagni Vaishamya) are considered fundamental mechanisms underlying disease progression.

Classical Ayurvedic authorities categorise Madhumeha as a Yapya Vyadhi, indicating a disorder that may be effectively controlled and managed over long periods but is difficult to eradicate completely.

2. Case Presentation

2.1 Patient Information

A 9-year-old male child, resident of Uttar Pradesh, India, presented to the OPD of Patanjali Wellness Centre, Haridwar (Uttarakhand), in February 2025. The patient was accompanied by his parents. Written informed consent was obtained from the parents prior to enrolment in the Ayurvedic management protocol.

2.2 Chief Complaints

At initial presentation (February 2025), the child presented with the following complaints:

- Excessive thirst (polydipsia)
- Frequent and excessive urination (polyuria)
- Increased appetite (polyphagia)
- Significant weight loss
- Generalized weakness and fatigue
- Reduced physical activity and scholastic performance

2.3 History of Present Illness

The child was diagnosed with Type 1 Diabetes Mellitus in February 2025 at a tertiary allopathic hospital following investigation for the above complaints. He was initiated on a basal-bolus insulin regimen of 1-1-1-3 units (rapid-acting insulin with three meals and basal insulin at night). His HbA1c at diagnosis was recorded as 11.2% on 05/02/2025, indicating significantly poor glycaemic control. The parents, concerned about long-term insulin dependence and seeking a curative or disease-modifying approach, presented to Patanjali Wellness Centre, Haridwar, for evaluation and Ayurvedic management. The parents reported no history of hypoglycaemic episodes prior to presentation.

2.4 Past / Personal / Family History

Past history: No prior history of hospitalization for diabetic ketoacidosis (DKA) or other major illness. No previous significant medical or surgical history.

Personal history: Normal birth and developmental milestones. The child was a student attending primary school. Diet was predominantly vegetarian. No history of tobacco, alcohol, or substance use (age-appropriate). Sleep and bowel habits were normal prior to onset of illness.

Family history: No first-degree relative with Type 1 or Type 2 Diabetes Mellitus reported. No known family history of autoimmune disorders.

3. Clinical Findings

3.1 General Examination

- General appearance — thin-built, mildly emaciated, conscious, cooperative; pallor absent; clubbing absent
- Lymphadenopathy — absent
- Oedema — absent
- Pulse rate — 88 beats/min, regular, normal volume
- Blood pressure — 90/60 mmHg (within normal paediatric range)
- Respiratory rate — 18 breaths/min
- Temperature — afebrile; weight below normal for age
- Height — age-appropriate

3.2 Ashtavidha Pariksha

- Nadi — Vata-Kapha predominant nadi
- Mutra — urine pale yellow, increased frequency
- Mala — passes stool once daily with normal consistency
- Prakriti — Vata-Kapha
- Jihwa (tongue) — Samata (coated)
- Sparsha (skin) — Samshittoshna (dry)
- Shabd — Spashta
- Drik — Prakruta
- Akriti — Madhyama

3.3 Rogi Dashavidha Pariksha

- Prakruti: Pitta-Kapha
- Vikriti: Bahu drava shleshma vikriti
- Sara: Madhyama
- Satva: Madhyama
- Satmya: Avara Satmya (regular intake of curd, lassi, milk, biscuits, and bread items)
- Samhanana: Madhyama
- Kostha: Krura
- Agni: Vishama
- Pramana: Madhyama
- Aharashakti: Madhyama
- Jaranashakti: Madhyama
- Vyayamashakti: Avara (easily fatigued on regular activities such as climbing stairs and cycling)
- Vaya: Bala

3.4 Systemic Examination

- Cardiovascular system: S1 S2 heard, no murmurs
- Respiratory system: bilateral air entry equal, no added sounds
- Abdomen: soft, non-tender, no organomegaly detected
- Central nervous system: higher functions intact, no focal neurological deficit
- Eyes: no evidence of diabetic retinopathy on fundoscopy at this stage

4. Diagnostic Assessment

4.1 Laboratory Investigations

At diagnosis (05/02/2025): HbA1c — 11.2%; urine glucose — positive; urine ketones — positive (mild).

4.2 Modern Diagnosis

Type 1 Diabetes Mellitus (autoimmune) — confirmed by positive GAD-65 antibody (7.31 IU/mL), HbA1c of 11.2% at onset, low-normal fasting C-peptide, and acute paediatric presentation.

4.3 Ayurvedic Assessment

- Dosha: Vata-Kapha predominance — Kapha causing Srotoavarodha and metabolic sluggishness; Vata causing Dhatu Kshaya, Ojokshaya, dryness, and polyuria
- Nidana: Sahaja (congenital/constitutional); Beeja Dosha
- Dushya — Primary: Rasa, Rakta, Meda, Mamsa; Secondary: Majja, Shukra, Ojas
- Agni — Jatharagni: Vishamagni; Dhatvagni: Mandagni at Rasa, Rakta, and Meda levels
- Srotas — Rasavaha, Raktavaha, Medovaha: vitiated; Mutravaha Srotas: Atipravritti; Ojavaha Srotas: Kshaya
- Samprapti: Beeja Dosha → Kapha-Vata Prakopa → Dhatvagnimandya → impaired Madhura Rasa metabolism → Madhu accumulation in Rasa-Rakta → passage as Madhumeha → progressive Ojokshaya → systemic immunodeficiency

5. Therapeutic Intervention

5.1 Aushadhi (Oral Ayurvedic Medications)

Group 1 — Kwath:

- Divya Chiryata Kwath – 100 g, twice daily before meals
- Divya Giloy Kwath – as directed, twice daily

Group 2 — Vati/Tablets:

- Divya Madhunashini Vati Extra Power – 60 g, 2 tablets twice daily before meals
- Divya Pancogrit – 60 tablets, 2 tablets twice daily before meals

Group 3 — Immunomodulatory:

- Divya Immunogrit – 60 tablets (33 g), as directed
- Divya Madhugrit – as directed

5.2 Panchakarma Procedures (During IPD Admission)

- Nabhi Basti — balancing Samana Vata, improving Agni, enhancing pancreatic function
- Pada Abhyanga — Vata Shamana, improving peripheral circulation
- Abhyanga of arms and legs — Vata Shamana, improving muscle tone, reducing wasting
- Mud application on abdomen — anti-inflammatory, cooling effect on abdominal viscera including the pancreas
- Fruit diet / fasting therapy — Ama Pachana, reducing Kapha, lowering glycaemic load

5.3 Pathya–Apathya

Pathya: Bitter gourd, fenugreek, drumstick, barley, millet, old rice, low glycaemic index foods, warm water, seasonal fruits in moderation, and regular yoga and pranayama.

Apathya: White sugar, refined flour, processed foods, cold beverages, excessive dairy, sedentary lifestyle, daytime sleeping, irregular meal timings, and mental stress.

5.4 Lifestyle Modifications

- Daily yoga: Surya Namaskar, Mandukasana, Ardha Matsyendrasana, Paschimottanasana
- Pranayama: Kapalbhati, Anulom-Vilom, Bhramari — 20–30 minutes daily
- Morning walk of 30–45 minutes
- Regulated sleep schedule (10:00 PM–6:00 AM)
- Regular home blood glucose monitoring by parents

6. Outcome and Follow-up

6.1 Glycaemic Control Over the Course of Treatment

Table 1 summarizes the results, which demonstrate a significant and sustained improvement in glycaemic control over the course of treatment.

Table 1: Follow-up laboratory parameters over the treatment course

Follow-up	HbA1c	Fasting C-peptide	Post-prandial C-peptide	Urine Glucose	GAD-65 Antibody
Baseline (Day 0) (05/02/2025)	11.2%	-	-	+1	-
Follow-up 1 (19/03/2025)	-	0.65 ng/mL	-	-	7.31 IU/mL
Follow-up 2 (17/05/2025)	6.3%	0.80 ng/mL	-	-	-
Follow-up 3 (27/08/2025)	6.8%	0.80 ng/mL	1.860 ng/mL	-	-
Follow-up 4 (30/11/2025)	6.0%	-	-	NIL	-

6.2 Symptomatic Improvement

Marked reduction in polyuria and polydipsia was observed within 4–6 weeks. The child showed improvement in energy, appetite, weight, concentration, and school performance. No hypoglycaemic episodes were reported after insulin discontinuation.

6.3 Objective Findings

- HbA1c: 11.2% → 6.3% → 6.8% → 6.0% (entirely without insulin)
- Fasting C-peptide: 0.65 → 0.80 ng/mL (preserved beta cell function)
- Post-prandial C-peptide: 1.860 ng/mL (active, stimulated insulin secretion)

6.4 Follow-up Duration

The follow-up duration was 10 months (February–November 2025) at Patanjali Wellness Centre, Haridwar. No admission for hyperglycaemia, hypoglycaemia, or DKA occurred during this period.

7. Discussion

7.1 Ayurvedic Mechanism of Action

- Divya Chiryata Kwath (Swertia chirayita): Tikta Rasa, Kapha-Pitta Shamaka. Active principles — swerchirin, amarogentin, xanthones — demonstrate anti-hyperglycaemic activity through stimulation of insulin secretion and improved peripheral glucose uptake.
- Divya Giloy Kwath (Tinospora cordifolia): a premier Rasayana and immunomodulator. Berberine and tinocordioside demonstrate anti-hyperglycaemic, anti-inflammatory, and immunoregulatory activity, and modulate T-regulatory lymphocyte activity, potentially attenuating autoimmune beta cell destruction.
- Divya Madhunashini Vati Extra Power: contains Gurmar (Gymnema sylvestre) — gymnemasaponins and gymnemic acids are established insulin secretagogues with preclinical beta cell regenerative potential. Karela contains polypeptide-P and charantin, which show significant hypoglycaemic activity.
- Nabhi Basti: stimulates Samana Vata and the enteric nervous system, potentially enhancing pancreatic secretomotor activity through visceral neuro-reflex pathways.
- Mud therapy: reduces local abdominal inflammation, lowers sympathetic overactivity, and exerts a cooling, detoxifying effect on visceral organs, including the pancreas.

7.2 Correlation with Modern Science

The improvement in C-peptide levels is of major clinical significance. C-peptide is co-secreted with insulin in equimolar amounts and serves as a direct biomarker of endogenous beta cell function. The rise from 0.65 ng/mL (fasting, March 2025) to 0.80 ng/mL fasting and 1.860 ng/mL post-prandial (August 2025) indicates (a) preservation of residual beta cell function, (b) possible attenuation of autoimmune destruction, and (c) sufficient endogenous insulin secretion to maintain near-normal glycaemia without exogenous insulin. The improvement was sustained beyond 10 months, exceeding the duration typical of the honeymoon phase, and supports a genuine disease-modifying effect of the Ayurvedic protocol.

8. Conclusion

This case documents a clinically significant and sustained improvement in glycaemic control in a 9-year-old male with confirmed autoimmune T1DM following comprehensive Ayurvedic management at Patanjali Wellness Centre, Haridwar. Over 10 months, the patient achieved complete discontinuation of insulin therapy, with HbA1c maintained between 6.0–6.8%, alongside preservation and improvement of C-peptide levels. These findings suggest a possible beta cell-protective and immunomodulatory effect of the Ayurvedic protocol employed. Prospective controlled trials are warranted. Unsupervised insulin cessation in T1DM is strongly discouraged; such management must be conducted only under rigorous institutional medical supervision.

9. Informed Consent

Written informed consent was obtained from both parents prior to enrolment, Panchakarma procedures, insulin discontinuation, and publication of clinical data. The patient's identity has been protected in accordance with case report publication ethics.

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