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Ayurvedic therapeutics in glycemic control: A case report on type 2 diabetes mellitus management

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Abstract

Background: Type 2 Diabetes Mellitus (T2DM) is a metabolic disorder marked by insulin resistance and hyperglycemia. Ayurvedic formulations offer a holistic approach targeting metabolic correction and *Doṣa* imbalance in *Madhumeha*.

Case Report: A 54-year-old male with T2DM was managed with *Madhunashini Vati*, BGR-34, *Chandraprabha Vati*, *Neem Ghan Vati*, and Karela Jamun Juice for 3 months, along with diet and lifestyle changes.

Results and Findings: FBS reduced from 156 mg/dL to 112 mg/dL, PPBS reduced from 234 mg/dL to 160 mg/dL, HbA1c decreased from 7.9% to 6.8%, Weight reduced from 82 kg to 78 kg, Symptom relief in fatigue, polyuria, and polydipsia.

Discussion: The Ayurvedic protocol effectively improved glycemic control, metabolic health, and quality of life without side effects, addressing the root causes of *Madhumeha*.

Conclusion: Ayurvedic therapeutics proved safe and effective in T2DM management, supporting its integration in holistic diabetes care.

Keywords: Type 2 diabetes mellitus, glycemic control, *Madhunashini Vati*, BGR-34, Ayurvedic management, Karela Jamun juice

Introduction

Medicinal plants have greatly gained importance in the management and treatment of human diseases, globally ^[1]. It constitutes the main source of primary healthcare in most rural populations, especially in many African countries, due to its affordability and availability.

Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from insulin resistance and relative insulin deficiency ^[1]. The global rise in T2DM prevalence is linked to sedentary lifestyle, poor dietary habits, stress, and genetic predisposition. It leads to multiple complications like neuropathy, nephropathy, retinopathy, and cardiovascular diseases, making early and effective management essential ^[2]. Modern pharmacological treatments for T2DM, including metformin, sulfonylureas, and insulin therapy, though effective initially, are associated with side effects such as gastrointestinal discomfort, hypoglycemia, and weight gain ^[3]. Additionally, these therapies often fail to address the root cause of metabolic dysregulation, resulting in progressive disease and long-term complications ^[4].

In *Ayurveda*, T2DM correlates with *Madhumeha*, a subtype of *Prameha*, characterized by excessive urination and sweetness in urine ^[5]. The pathogenesis involves *Kapha Dosha* predominance, *Medo Dhatu Dushti*, and vitiation of *Vata Dosha*, leading to deranged metabolism. Ayurvedic management emphasizes *Agnideepana*, *Medohara*, and *Rasayana* therapies, aiming to correct metabolic errors and rejuvenate organ function ^[6].

Polyherbal formulations like *Madhunashini Vati*, BGR-34, *Chandraprabha Vati*, and *Neem Ghan Vati* have been traditionally used to manage *Madhumeha*. These formulations possess *Pramehaghna*, hypoglycemic, anti-inflammatory, and antioxidant properties, enhancing pancreatic function and insulin sensitivity. Adjuvants like *Karela Jamun Juice* further contribute by reducing postprandial spikes and improving glucose metabolism ^[7].

Integrating Ayurvedic therapeutics with lifestyle modifications such as *Pathya-Apathya*, regular physical activity, and stress management provides a holistic approach to T2DM ^[8]. This approach not only targets glycemic control but also improves the overall quality of life, preventing microvascular and macrovascular complications associated with diabetes ^[9].

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This case report illustrates the practical efficacy of a comprehensive Ayurvedic regimen in a patient with T2DM who previously experienced side effects from conventional therapy ^[10]. The case demonstrates measurable biochemical improvements and symptomatic relief, thereby highlighting the potential role of Ayurvedic formulations as complementary or alternative therapy in diabetes management ^[11].

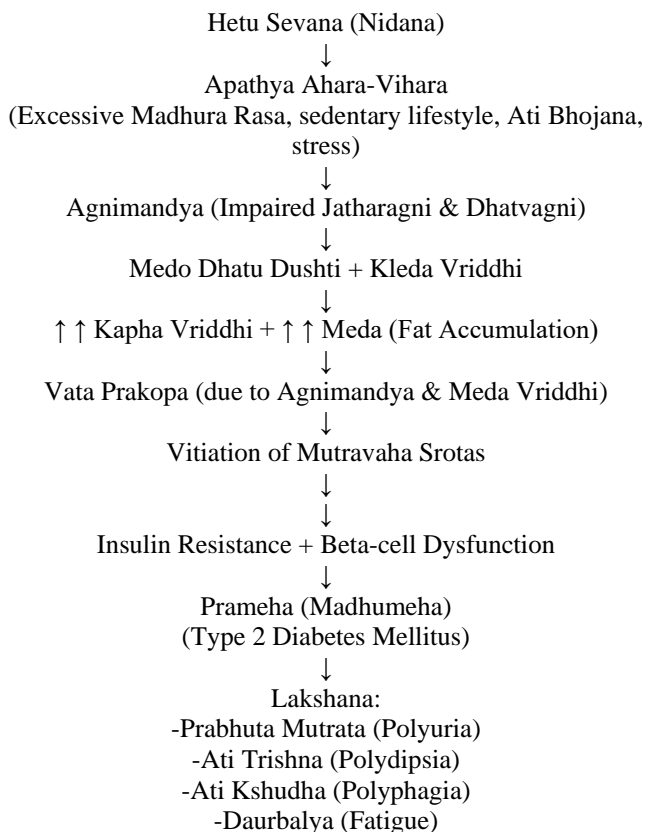
Case Report

A 54-year-old male presented with complaints of excessive thirst (*Trishna*), frequent urination (*Prabhuta Mutrata*), excessive hunger (*Ati Kshudha*), generalized weakness (*Daurbalya*), and disturbed sleep for the last 6 months. The patient had been diagnosed with Type 2 Diabetes Mellitus during a routine health check-up. Initially, he was prescribed allopathic medication (Metformin 500 mg OD), which caused gastrointestinal discomfort. Seeking an alternative, he approached for Ayurvedic management.

Personal and Family History

The patient followed a mixed diet, with a high intake of refined carbohydrates and sedentary lifestyle habits. His father was also diabetic. There was no history of alcohol or tobacco use.

Samprapti



-Angasada (Weakness in limbs)

Vital Examination

Parameter	Before Treatment	After Treatment (3 Months)
Pulse Rate	82 beats/min	76 beats/min
Blood Pressure	138/84 mmHg	128/80 mmHg
Respiratory Rate	18 breaths/min	17 breaths/min
Temperature	98.6°F	98.4°F
Body Weight	82 kg	78 kg
BMI	29.4 kg/m ²	27.9 kg/m ²

Systemic Examination

System	Before Treatment	After Treatment
Cardiovascular System	Normal S1, S2 sounds, no murmurs	Normal heart sounds
Respiratory System	Normal vesicular breath sounds	Clear breath sounds
Abdominal Examination	Mild epigastric tenderness	No tenderness
Nervous System	Mild tingling in lower limbs	Tingling resolved, normal reflexes

Asta Vidha Pariksha

Pariksha	Before Treatment	After Treatment
Nadi (Pulse)	Vata-Pitta dominant	Balanced Vata-Pitta
Mutra (Urine)	Increased frequency, turbid	Reduced frequency, clear
Mala (Stool)	Regular	Normal
Jihva (Tongue)	Coated, dry	Clean, moist
Shabda (Voice)	Feeble	Normal strength
Sparsha (Touch)	Mild dryness of skin	Normal skin moisture
Drik (Eyes)	No specific abnormality	Normal
Aakruti	Moderately obese	Moderate, with weight reduction

Glucose Monitoring

Parameter	Before Treatment	After Treatment (3 Months)
Fasting Blood Sugar	156 mg/dL	112 mg/dL
Postprandial Blood Sugar	234 mg/dL	160 mg/dL
HbA1c	7.9%	6.8%

Treatment Plan Schedule

Sr. No.	Drug Name	Dose	Frequency	Anupana (Vehicle)	Duration
1	Madhunashini Vati	1 tablet	Thrice Daily (Before Meals)	Lukewarm Water (<i>Ushnodaka</i>)	3 Months
2	BGR-34	1 tablet	Twice Daily (After Meals)	Lukewarm Water	3 Months
3	Chandraprabha Vati	1 tablet	Twice Daily (After Meals)	Lukewarm Water	3 Months
4	Neem Ghan Vati	1 tablet	Twice Daily (After Meals)	Lukewarm Water	3 Months
5	Karela Jamun Juice	20 ml	Twice Daily (Before Meals)	Plain Water (diluted if needed)	3 Months

Follow-up

Sr. No.	Drug Name	Dose	Frequency	Anupana (Vehicle)	Duration	Vital Parameters (After 3 Months)
1	Madhunashini Vati	1 tablet	Thrice Daily (Before Meals)	Lukewarm Water (<i>Ushnodaka</i>)	3 Months	Pulse: 76 beats/min
2	BGR-34	1 tablet	Twice Daily (After Meals)	Lukewarm Water	3 Months	Blood Pressure: 128/80 mmHg
3	Chandraprabha Vati	1 tablet	Twice Daily (After Meals)	Lukewarm Water	3 Months	Respiratory Rate: 17 breaths/min
4	Neem Ghan Vati	1 tablet	Twice Daily (After Meals)	Lukewarm Water	3 Months	Temperature: 98.4°F
5	Karela Jamun Juice	20 ml	Twice Daily (Before Meals)	Plain Water (diluted)	3 Months	Body Weight: 78 kg
						BMI: 27.9 kg/m ²

Pathya and Apathya ^[12]

Aspect	Pathya (Wholesome Diet & Lifestyle)	Apathya (Unwholesome Diet & Lifestyle)
Diet (Aahara)	-Whole grains: <i>Yava</i> (Barley), Millets	-Excess sugar, sweets, jaggery, honey
	-Green leafy vegetables (<i>Shaka varga</i>)	-Refined flour (Maida), bakery items
	-Bitter vegetables: Karela, Parwal	-Fried, oily, spicy, heavy foods
	-Jamun fruit and seed powder	-Processed and fast foods
	-Pulses: <i>Mudga</i> , <i>Masura</i>	-Red meat, processed meats
	-Low glycemic index fruits: Guava, Papaya	-Aerated drinks, alcohol, soft drinks
	-Spices: Turmeric (<i>Haridra</i>), Methi seeds	-Excess salt and salty snacks
	-Amla, Guduchi, Triphala	-High-fat dairy: Butter, cream
	-Fiber-rich foods, salads, buttermilk (<i>Takra</i>)	-Starch-rich items: Excess rice, potatoes
Lifestyle (Vihara)	-Regular exercise (brisk walk, yoga, pranayama)	-Sedentary habits, inactivity
	-Stress management, meditation	-Stress, anxiety, depression
	-Proper sleep (avoid day sleep, timely night sleep)	-Daytime sleeping, late night awakening (<i>Ratri Jagaran</i>)
	-Abhyanga (oil massage), Dinacharya, Ritucharya	-Irregular sleep and meals
	-Sunlight exposure in the morning	-Excess screen time, gadget use
	-Regular meal timings	-Suppression of natural urges (<i>Vega Dharana</i>)
	-Avoid overeating	-Overeating, untimely eating

Results and findings

Glycemic control

- Fasting Blood Sugar: Reduced from 156 mg/dL to 112 mg/dL.
- Postprandial Blood Sugar: Reduced from 234 mg/dL to 160 mg/dL.
- HbA1c: Decreased from 7.9% to 6.8%.

Vital Examination Improvement

- **Pulse Rate:** Improved from 82 beats/min to 76 beats/min.
- **Blood Pressure:** Decreased from 138/84 mmHg to 128/80 mmHg.
- **Respiratory Rate:** Reduced from 18 breaths/min to 17 breaths/min.
- **Temperature:** Slight decrease from 98.6°F to 98.4°F.
- **Body Weight:** Reduced from 82 kg to 78 kg.
- **BMI:** Decreased from 29.4 kg/m² to 27.9 kg/m².

Asta Vidha Pariksha

- **Nadi (Pulse):** From Vata-Pitta dominance to Balanced Vata-Pitta.
- **Mutra (Urine):** Frequency normalized; clarity improved.
- **Mala (Stool):** Maintained regularity and normal form.
- **Jihva (Tongue):** From coated and dry to clean and moist.
- **Shabda (Voice):** From feeble to strong.
- **Sparsha (Touch):** From mild skin dryness to normal skin moisture.
- **Drik (Eyes):** Maintained normal.
- **Aakruti (Body Build):** From moderately obese to moderately built with reduced weight.

Subjective Symptom Relief

- **Fatigue:** Markedly reduced; increased stamina.
- **Polyuria:** Frequency of urination normalized.
- **Polydipsia:** Excessive thirst reduced.
- **Sleep Quality:** Improved, uninterrupted sleep.
- **Tingling Sensation:** Completely resolved in lower limbs.

Overall Observations

- Significant improvement in glycemic profile within 3 months.
- Vital parameters stabilized within the normal range.
- Weight reduction led to better metabolic and cardiovascular health.
- No adverse drug reactions or complications reported.
- Enhanced quality of life and general well-being.

Discussion

The present case report demonstrates the significant role of Ayurvedic therapeutics in the management of Type 2 Diabetes Mellitus (T2DM). The holistic combination of Madhunashini Vati, BGR-34, Chandraprabha Vati, Neem Ghan Vati, and Karela Jamun Juice, along with dietary regulation and physical activity, resulted in considerable improvement in glycemic parameters and overall health ^[13]. The multi-drug approach focused on enhancing *Agnibala*, correcting *Medo Dhatu Dushti*, and promoting *Pramehaghna* action, leading to the normalization of blood glucose levels, weight reduction, and alleviation of classical diabetic symptoms such as polyuria, polydipsia, and fatigue ^[14].

Madhunashini Vati is well known for its *Pramehaghna* property, improving insulin secretion and glucose

metabolism due to the presence of *Gudmar* and other herbs. BGR-34, a polyherbal CCRAS formulation, contributed antioxidant, anti-inflammatory, and beta-cell protective effects ^[15]. *Chandraprabha Vati* and *Neem Ghan Vati* played pivotal roles in improving urinary health, reducing sugar excretion, and purifying the blood (*Raktashodhana*). *Karela Jamun Juice* enhanced insulin sensitivity and moderated postprandial sugar spikes. Together, these interventions addressed both *Dosic* imbalances and metabolic errors contributing to *Madhumeha* ^[16].

The patient's vital signs, including pulse rate, blood pressure, and BMI, showed remarkable improvement post-treatment, reflecting systemic benefits beyond glycemic control. *Asta Vidha Pariksha* revealed positive transformations in *Nadi*, *Mutra*, *Jihva*, and *Aakruti*, indicating internal balance restoration ^[17]. Moreover, the subjective improvement in fatigue, sleep quality, and neurological symptoms like tingling sensation signifies the efficacy of this holistic protocol in not only controlling blood sugar but also preventing microvascular complications commonly seen in diabetes ^[18].

Overall, this case underlines the potential of Ayurvedic formulations as effective adjuncts or alternatives to conventional diabetic management, especially for patients intolerant to modern medicines ^[19]. The intervention proved safe, effective, and comprehensive in approach, targeting both symptoms and root causes. However, longer duration studies with larger populations are needed to validate these outcomes scientifically and integrate them into standardized diabetic care protocols ^[20].

Conclusion

The integrative Ayurvedic intervention comprising *Madhunashini Vati*, BGR-34, *Chandraprabha Vati*, *Neem Ghan Vati*, and *Karela Jamun Juice* demonstrated significant clinical efficacy in the management of Type 2 Diabetes Mellitus, as evidenced by improved glycemic control, stabilized vital parameters, reduction in body weight, and alleviation of classical diabetic symptoms such as polyuria, polydipsia, and fatigue. The approach effectively addressed the underlying *Dosha* imbalances, *Agnimandya*, and *Medo Dhatu Dushti*, contributing to holistic health restoration without any adverse effects. This case underscores the potential of Ayurvedic therapeutics as a safe, effective, and sustainable complementary strategy in diabetes management, warranting further research through long-term studies and larger clinical trials.

Conflict of interest: Nil

Source of support: None

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