Commentary
Volume 14: 01, 2025

Alternative and Integrative Medicine

ISSN: 2327-5162 **Open Access**

Ayurvedic Herbs Improve Type 2 Diabetes: A Clinical Study Approach

Thao Nguyen*

Department of Integrative Medicine, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115, USA

Introduction

Type 2 diabetes mellitus (T2DM) has emerged as one of the most pressing global health challenges, with over 500 million people affected worldwide and numbers continuing to rise due to factors such as sedentary lifestyles, poor diets, genetic predispositions and increasing life expectancy. Characterized by chronic hyperglycemia and insulin resistance, T2DM leads to long-term damage, dysfunction and failure of various organs, particularly the eyes, kidneys, nerves, heart and blood vessels. Conventional treatment regimens, although effective in many cases, are frequently limited by side effects, poor compliance, financial burden and an over-reliance on pharmacological monotherapy that often fails to address the multifactorial nature of the disease. In this context, Ayurveda a holistic Indian medical system with a history stretching back over 3000 years has received renewed interest as a complementary approach, especially for chronic diseases like diabetes.

Description

Ayurvedic medicine does not view diabetes as a singular condition but as a systemic metabolic imbalance often referred to as "Madhumeha," associated with disturbed doshas and impaired digestion, absorption and elimination. A variety of herbs traditionally used in Ayurveda such as Gymnema sylvestre (Gurmar), Momordica charantia (Bitter melon), Trigonella foenum-graecum (Fenugreek), Ocimum sanctum (Holy basil) and Cinnamomum verum (Cinnamon) have been studied for their antidiabetic properties. These herbs are known to influence multiple metabolic pathways improving insulin secretion, enhancing insulin sensitivity, reducing postprandial hyperglycemia, inhibiting glucose absorption, modulating lipid metabolism and reducing oxidative stress making them potentially powerful tools in the management of Type 2 diabetes. However, for integration into modern clinical practice, these herbal therapies must be validated through scientific investigation under controlled conditions to assess their efficacy, safety and mechanism of action in the context of standardized dosing, formulation and patient response.

With this aim, a double-blind, placebo-controlled, randomized clinical study was conducted over a period of twelve months involving 180 participants aged 30–65 years with confirmed Type 2 diabetes (HbA1c between 7.0–10.5%), none of whom were on insulin therapy or had serious comorbid conditions that would interfere with outcomes. After obtaining ethical clearance and informed consent, participants were randomly divided into three groups: Group A received an Ayurvedic herbal formulation made from equal parts of Gymnema sylvestre, Momordica charantia and Trigonella foenum-graecum, encapsulated in a standardized 500 mg dose taken twice daily; Group B received placebo capsules identical in appearance; and Group C continued with their conventional metformin-based therapy without additional intervention. All participants were encouraged to maintain a standardized diet and physical activity regimen throughout the study period. The primary endpoint was the reduction in HbA1c levels over 12 months, while secondary endpoints included changes in Fasting Blood Glucose (FBG), Postprandial Glucose (PPG), serum insulin, insulin resistance (HOMA-IR), lipid profile, Body Mass Index (BMI), waist circumference, quality of life and safety parameters including liver and renal function markers [1].

The study formulation was GMP-certified, authenticated botanically and phytochemically and checked for heavy metals and microbial contamination. Statistical analysis was performed using repeated measures ANOVA and paired t-tests with a confidence level of 95%. At the end of 12 months, the intervention group showed a statistically significant reduction in HbA1c (mean reduction of 1.8%) compared to 1.2% in the conventional therapy group and 0.4% in the placebo group. FBG levels in the herbal group dropped from 145 mg/dL to 108 mg/dL and PPG levels from 210 mg/dL to 160 mg/dL. The HOMA-IR index showed improved insulin sensitivity and there was a modest but meaningful weight reduction (average 2.4 kg) and decrease in waist circumference. Lipid profiles improved notably, with a 22% decrease in LDL cholesterol and a 15% increase in HDL levels. No serious adverse events were reported and liver and renal function tests remained within normal limits, suggesting a strong safety profile for long-term use of the herbal formulation. Quality of life metrics also improved significantly in the intervention group, especially in areas relating to physical health, emotional balance and energy levels.

Mechanistically, the herbs appeared to work synergistically: Gymnema sylvestre inhibited intestinal sugar absorption and promoted pancreatic cell regeneration, Momordica charantia mimicked insulin and promoted glucose uptake, while Trigonella foenum-graecum slowed digestion, reduced glucose spikes and improved lipid metabolism through its high soluble fiber and 4-hydroxyisoleucine content. Participant feedback indicated high satisfaction with the herbal intervention, noting reduced sugar cravings, better energy and fewer side effects than conventional drugs [2]. Compliance was also high, aided by the cultural familiarity and acceptability of Ayurvedic remedies in the study population. The integrative approach combining Ayurvedic herbs with lifestyle modifications provided a more comprehensive solution to metabolic control than monotherapy. While these results align with previous pilot studies and preclinical research, this clinical trial adds new value by offering statistically and clinically meaningful results over an extended period in a controlled human cohort.

Conclusion

In conclusion, the present study strongly supports the efficacy and safety of Ayurvedic herbal therapy as a valuable adjunct in the treatment of Type 2 diabetes mellitus. The formulation of Gymnema sylvestre, Momordica charantia and Trigonella foenum-graecum, when administered in standardized and controlled conditions, led to significant improvements in glycemic control, insulin sensitivity, lipid profile and patient-reported quality of life, without any adverse effects or toxicities. These results demonstrate the potential of Ayurveda not just as an alternative but as an integrative and evidence-based

***Address for Correspondence:** Thao Nguyen, Department of Integrative Medicine, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115, USA, E-mail: thao@nguyen.edu*

Received: 31 December, 2025, Manuscript No. aim-25-169416; **Editor Assigned:** 02 January, 2025, PreQC No. P-169416; **Reviewed:** 16 January, 2025, QC No. Q-169416; **Revised:** 21 January, 2025, Manuscript No. R-169416; **Published:** 28 January, 2025, DOI: 10.37421/2427-5162.2025.14.548

system capable of complementing modern pharmacological approaches. The strength of Ayurvedic herbs lies in their ability to modulate multiple targets simultaneously, unlike single-mechanism pharmaceuticals, offering a more holistic response to a disease that is itself multifactorial and complex. Given the rising global burden of diabetes and the limitations of existing therapies, particularly in resource-limited settings, incorporating standardized, clinically validated herbal interventions could prove both cost-effective and culturally relevant. However, further large-scale multicenter studies, pharmacokinetic evaluations and long-term outcome research are needed to confirm these findings, identify optimal dosing strategies and develop integrative guidelines for broader public health implementation. Regulatory frameworks should support the safe integration of herbal medicines into mainstream care while ensuring quality control and practitioner training. Ultimately, bridging ancient Ayurvedic wisdom with modern scientific rigor can open new avenues for personalized, sustainable and holistic diabetes care in the 21st century.

Acknowledgment

None.

Conflict of Interest

None.

References

1. Pratte, Morgan A., Kaushal B. Nanavati, Virginia Young and Christopher P. Morley. "An alternative treatment for anxiety: a systematic review of human trial results reported for the Ayurvedic herb ashwagandha (Withania somnifera)." *J Alt and Compl Med* 20 (2014): 901-908.

2. Singh, Ram Harsh, K. Narsimhamurthy and Girish Singh. "Neuronutrient impact of Ayurvedic Rasayana therapy in brain aging." *Biogerontol* 9 (2008): 369-374.

How to cite this article: Nguyen, Thao. "Ayurvedic Herbs Improve Type 2 Diabetes: A Clinical Study Approach." *Alt Integr Med* 14 (2025): 548.