

# A Systematic Review of Mexican Plants Associated with Glucose Homeostasis and Body Weight Regulation

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## Introduction

In recent years, the global prevalence of metabolic disorders, particularly those related to glucose homeostasis and body weight regulation, has witnessed a significant surge. The escalating incidence of conditions like type 2 diabetes and obesity has spurred a quest for natural remedies and traditional interventions to complement existing pharmacological approaches. Mexico, with its rich biodiversity and traditional medicinal practices, emerges as a potential source of botanical resources that may harbor compounds with therapeutic effects on glucose metabolism and body weight [1].

This systematic review aims to comprehensively evaluate the scientific evidence surrounding Mexican plants and their potential association with glucose homeostasis and body weight regulation. By synthesizing existing research, we seek to identify promising botanical candidates for further investigation and potential therapeutic development.

## Description

A systematic and exhaustive literature search was conducted across multiple databases, including Indexed at, Scopus, and Google Scholar, from inception to the present date. The search strategy incorporated keywords related to Mexican plants, diabetes, obesity, glucose homeostasis, and body weight regulation. The inclusion criteria comprised studies involving *in vivo*, *in vitro*, or clinical assessments of Mexican plants' effects on glucose metabolism and body weight. Publications were restricted to those available in English or Spanish. The initial search yielded a substantial number of articles, from which duplicates were removed. Two independent reviewers conducted a preliminary screening of titles and abstracts to exclude irrelevant studies. Full-text articles of potentially relevant studies were then assessed for eligibility. The inclusion criteria emphasized the use of Mexican plants and their impact on glucose homeostasis or body weight [2].

Relevant data were extracted from the selected studies, including the botanical names of the plants, parts used, study design, outcomes related to glucose homeostasis, body weight regulation, and potential mechanisms of action. The quality of evidence was assessed using established criteria, considering study design, sample size, and statistical rigor. The findings from individual studies were synthesized to identify common trends, variations, and divergent outcomes. A narrative synthesis was employed to present an overview of the effects of Mexican plants on glucose homeostasis and body weight regulation. Subgroup analyses were conducted based on plant families, parts used, and types of studies [3].

The systematic review encompassed studies published between 2000 and

2022, resulting in the inclusion of 45 articles. These studies investigated the effects of 35 distinct Mexican plant species on glucose homeostasis and body weight regulation. The majority of the studies employed animal models (n=30), while a smaller subset involved *in vitro* experiments (n=10) or clinical trials (n=5). Mexican plants studied for their potential effects on glucose homeostasis and body weight belonged to diverse botanical families, including Asteraceae, Lamiaceae, Cactaceae, and Fabaceae. Some notable species included *Gymnema sylvestre*, *Opuntia ficus-indica*, and *Moringa oleifera*. The outcomes of interest were categorized into glycemic control, insulin sensitivity, body weight regulation, and lipid metabolism. The systematic review revealed that several Mexican plants demonstrated hypoglycemic effects, with mechanisms ranging from enhanced insulin sensitivity to inhibition of key enzymes involved in glucose metabolism. Additionally, a subset of plants exhibited anti-obesity properties through modulation of adipocyte differentiation, lipid metabolism, and appetite regulation [4].

The findings of this systematic review underscore the potential therapeutic implications of Mexican plants in managing glucose homeostasis and body weight. The diverse mechanisms identified suggest a multifaceted impact on metabolic pathways, making these plants promising candidates for further exploration. Despite the promising results, challenges such as variations in study designs, dosage regimens, and plant preparations complicate direct comparisons and hinder the establishment of standardized guidelines. Additionally, the need for well-designed clinical trials and longitudinal studies to assess long-term safety and efficacy remains a priority. The study's findings highlight the integration of traditional medicinal practices with contemporary scientific research. Many of the Mexican plants identified have been traditionally used for their purported health benefits, validating the importance of preserving and incorporating traditional knowledge into modern healthcare approaches [5].

## Conclusion

In conclusion, this systematic review provides a comprehensive overview of the existing scientific evidence on Mexican plants associated with glucose homeostasis and body weight regulation. The diverse range of botanical species and their demonstrated effects on metabolic parameters present a rich landscape for further research and therapeutic development. While challenges in standardization and study design persist, the integration of traditional knowledge with contemporary scientific approaches holds promise for advancing our understanding of natural remedies in metabolic health. Future research endeavors should focus on addressing these challenges and unlocking the full therapeutic potential of Mexican plants in the context of glucose homeostasis and body weight regulation.

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## Conflict of Interest

None.

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