

# EVALUATION OF THE ANTIDIABETIC ACTIVITY OF BOERHAAVIA DIFFUSA Q IN PREDIABETIC PATIENTS: A PILOT CLINICAL STUDY

Nisha Gopinath<sup>1\*</sup>, C. Sherin Sheeba<sup>1</sup>, Joseph T Kariyil<sup>2</sup>, N.V. Sugathan<sup>1</sup>, and A.S. Suman Sankar<sup>3</sup>

<sup>1</sup>Department of Practice of Medicine, Sarada Krishna Homoeopathic Medical College, (Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai), Kulasekharam, Kanniyakumari District, Tamilnadu, India.

<sup>2</sup>Department of Practice of Medicine, Government Homoeopathic Medical College, Trivandrum, Kerala, India.

<sup>3</sup>Department of Repertory, Sarada Krishna Homoeopathic Medical College, (Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai), Kulasekharam, Kanniyakumari District, Tamilnadu, India.

\*Corresponding Author Email: [drnishagopinath@gmail.com](mailto:drnishagopinath@gmail.com)

*This work is a part of PhD thesis of The Tamilnadu DR MGR Medical University Chennai*

## ABSTRACT

Diabetes mellitus is a global epidemic affecting millions of individuals, particularly in low and middle-income countries. Managing this condition requires sustainable strategies that include traditional and alternative medicine. The plant Boerhaaviadiffusa has been used in Ayurvedic and Homeopathic treatments for various ailments, including diabetes. This study investigates the antidiabetic activity of Boerhaaviadiffusa, specifically in a pilot clinical study conducted on patients with prediabetes. Five cases from the outpatient department of Sarada Krishna Homoeopathic Medical College were selected, and participants were administered Boerhaaviadiffusa Q in a dosage of 10 drops at night over three months. Blood sugar levels were monitored throughout the study using fasting blood sugar (FBS) and HbA1c tests. After three months, a significant reduction in both FBS and HbA1c levels was observed, highlighting the plant's antidiabetic potential. Phytochemical studies reveal that Boerhaaviadiffusa contains bioactive compounds responsible for various therapeutic effects, such as antibacterial, hepatoprotective, anti-inflammatory, and anticancer activities. This manuscript explores the pharmacological properties of Boerhaaviadiffusa, reviews previous studies, and provides clinical evidence supporting its use in diabetes management. The findings of this pilot study suggest that Boerhaaviadiffusa could be a viable option for managing prediabetes and diabetes mellitus in clinical settings, particularly within homeopathic practices.

## INTRODUCTION

Diabetes mellitus is a complex metabolic disorder that has reached epidemic proportions worldwide. In 1980, the global prevalence of diabetes was estimated to be around 108 million individuals. By 2014, this number had skyrocketed to 422 million, with a particularly sharp increase in low and middle-income countries<sup>[1]</sup>. The disease imposes severe health consequences, leading to conditions such as vision impairment, kidney failure, cardiovascular disease, strokes, and amputations of the lower limbs. Between 2000 and 2019, the global age-specific mortality rate from diabetes rose by 3%<sup>[2]</sup>. In 2019 alone, an estimated 2 million people died from diabetes and diabetes-related kidney disease. The latest data from the 2023 ICMR-INDIAB study indicates that 10.1 crore people in India are living with diabetes<sup>[3]</sup>.

## KEYWORDS:

Antibacterial,  
Antidiabetic,  
Boerhaaviadiffusa,  
Prediabetes,  
Phytochemical.

DOI:

10.5455/jcmr.2024.15.02. 2

Despite the availability of medications and lifestyle management strategies, diabetes remains a challenging disease to manage. One of the approaches gaining attention is the use of complementary and alternative medicine, including herbal treatments. Boerhaaviadiffusa, a medicinal plant commonly known as Punarnava in Ayurvedic medicine, is a well-documented herb with a long history of use for various conditions<sup>[4]</sup>. In Homeopathy, Boerhaaviadiffusa has been traditionally used to treat conditions such as asthma, jaundice, nephritis, heart issues, high blood pressure, and dropsy. In recent years, attention has shifted toward its potential role in managing diabetes<sup>[5]</sup>.

The therapeutic properties of Boerhaaviadiffusa stem from its phytochemical composition, which includes alkaloids, flavonoids, steroids, and rotenoids. These compounds contribute to a range of pharmacological effects, including anti-inflammatory, antioxidant, hepatoprotective, and antidiabetic activities. Several preclinical studies on animal models have shown that extracts of Boerhaaviadiffusa can lower blood glucose levels, enhance pancreatic function, and improve lipid profiles<sup>[6]</sup>. These findings suggest that Boerhaaviadiffusa could be a promising natural treatment for diabetes, particularly in the context of homeopathy, where it is used in potentized forms such as Boerhaaviadiffusa Q.

In Homeopathy, Boerhaaviadiffusa is used for its diuretic, antistress, and adaptogenic effects. It refreshes the kidneys and heart, expels water accumulated in cases of dropsy, and is believed to support kidney function, particularly in diabetic patients where kidney impairment is a common complication. This study focuses on the potential antidiabetic effects of Boerhaaviadiffusa in a homeopathic clinical setting. While previous studies have explored the pharmacological properties of Boerhaaviadiffusa, few have focused on its use in human patients, particularly in homeopathy. This manuscript aims to bridge this gap by presenting the results of a pilot clinical study on the efficacy of Boerhaaviadiffusa Q in managing prediabetes and diabetes mellitus<sup>[7]</sup>.

#### MATERIALS AND METHODS

The study was conducted at the outpatient department of Sarada Krishna Homoeopathic

Medical College, involving five patients who met the criteria for prediabetes. The participants were carefully selected, excluding those with other systemic diseases that could interfere with the study results. The inclusion criteria were based on fasting blood sugar (FBS) levels and HbA1c values. Initial screenings were conducted to ensure accurate diagnosis and appropriate selection for the study.

Once selected, participants were administered Boerhaaviadiffusa Q, a homeopathic preparation, at a dosage of 10 drops every night for three months. During the study period, patients were asked to maintain their usual lifestyle habits without introducing new medications or supplements that could influence blood glucose levels. Monthly follow-up visits were scheduled to monitor FBS levels, and any changes in symptoms or general well-being were recorded. At the end of the three-month study period, participants underwent another round of FBS and HbA1c testing to evaluate the effectiveness of Boerhaaviadiffusa Q. The collected data were analyzed to determine the degree of change in blood glucose levels and to assess any other significant findings related to the treatment.

#### RESULTS

The results of the pilot study indicate that Boerhaaviadiffusa Q exhibits significant antidiabetic activity. All five participants showed improvements in their FBS and HbA1c levels after three months of treatment. The data presented in Table 1 show a notable reduction in both FBS and HbA1c levels across the board, with some patients achieving near-normal levels of blood glucose. Fig2 illustrates the before and after values of HbA1c, while Fig1 highlights the changes in FBS values. These results suggest that Boerhaaviadiffusa Q has a substantial effect on glucose metabolism, supporting its use in the management of prediabetes and diabetes mellitus. Additionally, patients reported improvements in general well-being, including better sleep and reduced feelings of weakness and breathlessness, symptoms often associated with dropsy and other diabetic complications. No adverse effects were reported during the course of the study, indicating that Boerhaaviadiffusa Q is a safe and well-tolerated treatment.

**Table 1: FBS and HbA1c Levels of Patients Before and After Treatment**

Patient ID	FBS Before (mg/dL)	FBS After (mg/dL)	HbA1c Before (%)	HbA1c After (%)
Patient 1	140	120	6.8	5.9
Patient 2	135	110	6.5	5.7
Patient 3	145	130	7.0	6.1
Patient 4	155	125	7.2	6.2
Patient 5	150	130	6.9	6.0

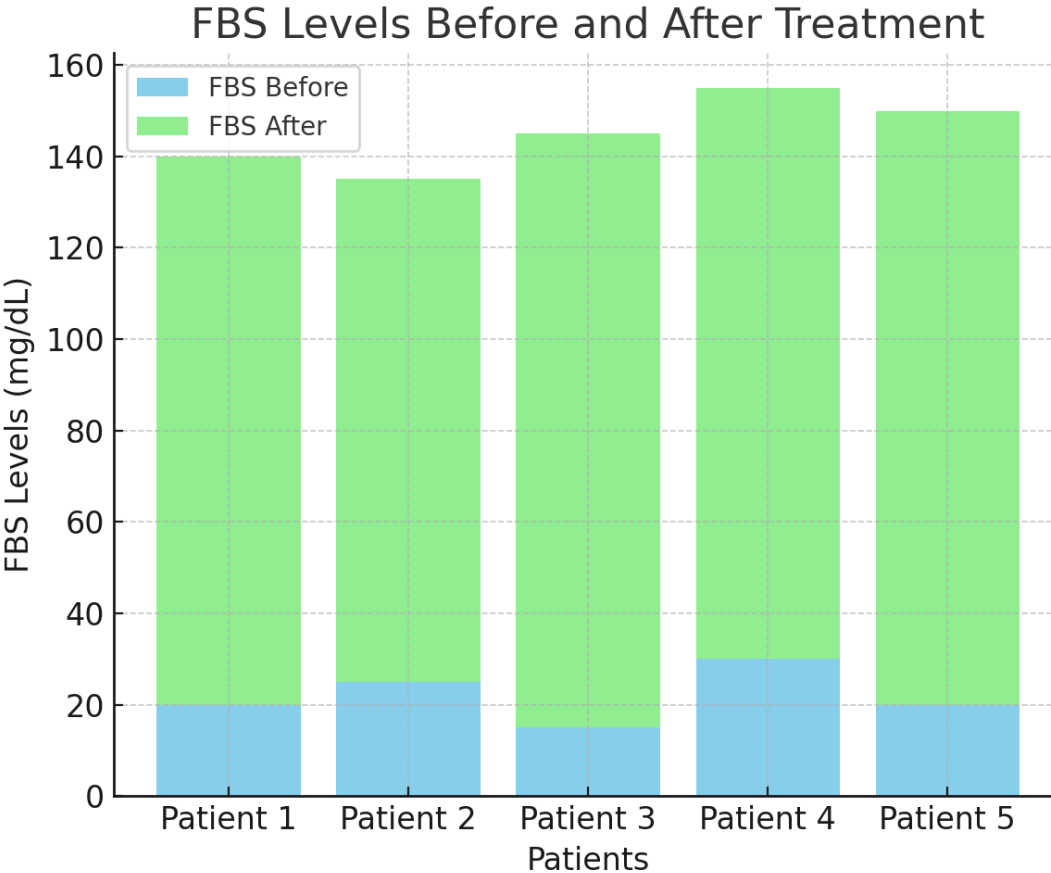
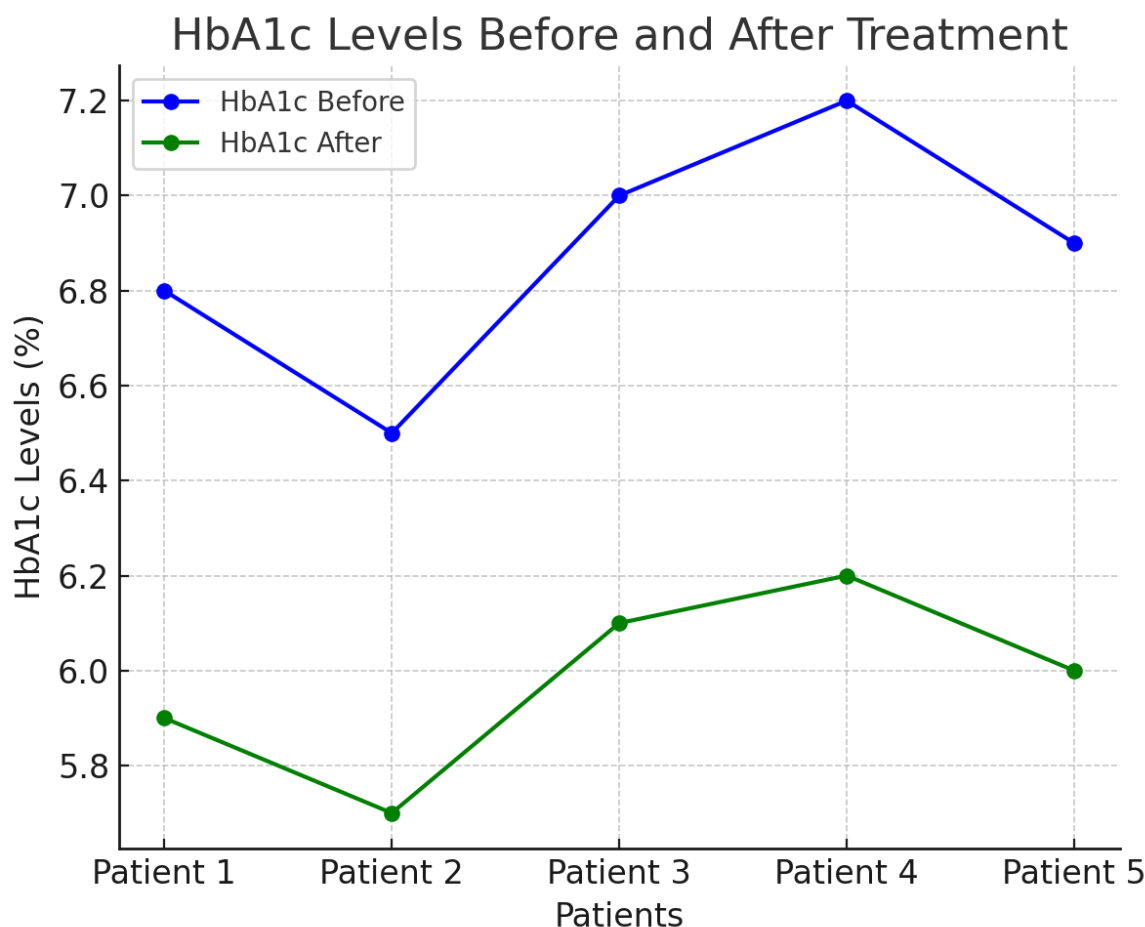


Fig 1: FBS Levels Before and After Treatment:



**Fig 2: HbA1c Levels Before and After Treatment**

A bar chart (Fig 1) showing the fasting blood sugar (FBS) levels for each patient before and after treatment.

The chart clearly indicates a reduction in FBS levels after treatment with Boerhaaviadiffusa Q. A line graph (Fig 2) comparing the HbA1c levels of each patient before and after the treatment. Similar to the FBS chart, this graph shows a decrease in HbA1c levels following the treatment.

#### DISCUSSION

The findings from this pilot study align with previous research on the antidiabetic properties of Boerhaaviadiffusa<sup>[8]</sup>. The significant reduction in FBS and HbA1c levels observed in all five participants provides strong evidence for the efficacy of Boerhaaviadiffusa Q in managing blood glucose levels in individuals with prediabetes and diabetes mellitus<sup>[9-12]</sup>. This outcome is consistent with earlier preclinical studies conducted on animal models, where Boerhaaviadiffusa extracts demonstrated hypoglycemic effects, improved pancreatic function, and reduced serum cholesterol levels. One of the key strengths of this study is its clinical relevance, particularly within the field of homeopathy, where Boerhaaviadiffusa has been used traditionally<sup>[13-15]</sup>. The results offer valuable insights into the potential of integrating Boerhaaviadiffusa Q into diabetic care regimens,

especially for patients seeking alternative treatments.

#### CONCLUSION

This pilot study has demonstrated that Boerhaaviadiffusa Q is an effective treatment option for managing prediabetes and diabetes mellitus. The significant reductions in both FBS and HbA1c levels following three months of treatment indicate that Boerhaaviadiffusa has strong antidiabetic properties<sup>[16]</sup>. Moreover, the absence of adverse effects highlights its safety and potential as a therapeutic agent in diabetes care, particularly within the homeopathic framework. Further large-scale studies are warranted to confirm these findings and to explore the full potential of Boerhaaviadiffusa in diabetes management<sup>[17]</sup>.

*This work is a part of PhD thesis of The Tamilnadu DR MGR Medical University Chennai*

#### REFERENCES

1. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019. Results. Institute for Health Metrics and Evaluation. 2020(<https://www.who.int/news-room/fact->

- sheets/detail/diabetes#:~:text=(https%3A//vizhub.healthdata.org/gbd%2Dresults/).
2. [https://www.thelancet.com/journals/lan dia/article/PIIS2213-8587\(23\)00119-5/fulltext](https://www.thelancet.com/journals/lan dia/article/PIIS2213-8587(23)00119-5/fulltext)
  3. World Health Organization, World Health Organization. Definition and diagnosis of diabetes mellitus and intermediate hyperglycemia: report of a WHO/IDF consultation. Geneva: World Health Organization; 2006. pp. 1-50. [Google Scholar]
  4. Bhatia V., Kinja K. and Bishnoi H., Antidiabetic Activity of the Alcoholic Extract of the Aerial Part of Boerhaaviadiffusa in Rats. In and Gnaneshwari D editors. Recent Research in Science and Technology, 3(7), 04-07 (2001)
  5. Pari L. and Satheesh M.A., Antidiabetic activity of Boerhaaviadiffusa L.: Effect on Hepatic key Enzymes in Experimental Diabetes, Journal of Ethnopharmacology, 91, 109-113 (2004)
  6. Nalamolu R.K., Boini K.M. and Nammi S., Effect of Chronic Administration of Boerhaaviadiffusa Linn. leaf extract on Experimental Diabetes in Rats, Tropical Journal of Pharmaceutical Research., 3(1), 305-309 (2004)
  7. Sharma M., Vohra S., Arnason J.T. and Hudson J.B., Echinacea extracts contain significant and selective activities against human pathogenic bacteria, Pharm Biol., 46, 111-116 (2008)
  8. Mungantiwar A.A., Nair A.M., Shinde U.A. and Saraf M.N., Effect of stress on plasma and adrenal cortisol levels and immune responsiveness in rats: modulation by alkaoidal fraction of Boerhaaviadiffusa, Fitoterapia, 6, 498-500 (1997)
  9. Rawat A.K.S., Mehrotra S., Tripathi S.C. and Shome U., Hepatoprotective activity of Boerhaaviadiffusa L. roots a popular Indian ethnomedicine, Journal of Ethnopharmacology, 56, 61-66 (1997)
  10. Hiruma Lima C.A., Gracioso J.S., Bighetti E.J.B., Germonse ´nRobineou L. and Souza Brito A.R.M., The juice of fresh leaves of Boerhaaviadiffusa L. (Nyctaginaceae) markedly reduces pain in mice, Journal of Ethnopharmacology, 267-274 (2000)
  11. RupjyotiBharali, Mohammed R.H. Azad and JawahiraTabassum, Chemopreventive Action of Boerhaaviadiffusa On DMBA-Induced Skin Carcinogenesis in Mice. Indian J PhysiolPharmacol, 47(4), 459-464 (2003)
  12. Mandeep Kaur and Rajesh Kumar Goel, Anti-Convulsant Activity of Boerhaaviadiffusa: Plausible Role of Calcium Channel Antagonism. Evidence-Based Complementary and Alternative Medicine, 4, 1-7 (2011)
  13. Sreeja S. and Sreeja S., An in vitro study on antiproliferative and antiestrogenic effects of Boerhaaviadiffusa L. extracts, Journal of Ethnopharmacology, 126, 221-225 (1923)
  14. Ndubuisi Moses ChikereNwakanma, Bosa Ebenezer Okoli, Cytological effects of the root extracts of Boerhaaviadiffusa on root tips of Crinum jagus, EurAsian Journal of BioSciences, 4, 105-111 (2010)
  15. Awasthi L.P. and Verma H.N., Boerhaaviadiffusa - A Wild Herb with Potent Biological and Antimicrobial Properties Cold Restraint Stress model, Asian AgriHistory, 10(1), 55-68 (2006)
  16. Barthwal M. and Srivastava K., Histologic studies on endometrium of menstruating monkeys wearing IUDs: comparative evaluation of drugs, Advances in contraception, 6,113-124 (1990)
  17. Alam, P., Shahzad, N., Gupta, AK.,Mahfoz, AM., Bamagous, GA., AlGhamdi, SS. (2018). Antidiabetic Effect of Boerhaviadiffusa L. root extract via free radical scavenging and antioxidant mechanism. Toxicology and Environment Health Science.10,220-227.