



ORIGINAL ARTICLE

Formulation and Evaluation of Herbal Syrup for the Management of Parkinson's Disease

Sharma Mahima, Gehlot Suman, Shrivastava Satyaendra
Parijat college of Pharmacy, Indore [M.P], India

ABSTRACT

Parkinson's disease is a progressive neurological disorder characterized by tremors, rigidity, and impaired motor coordination caused by degeneration of dopaminergic neurons. Herbal medicines have gained increasing attention due to their neuroprotective, antioxidant, and adaptogenic properties. The present study aimed to formulate and evaluate a herbal syrup containing *Mucuna pruriens*, *Bacopa monnieri* (Brahmi), and *Withania somnifera* (Ashwagandha) for supportive management of Parkinson's disease. The herbal extracts were prepared using the decoction method and incorporated into a syrup base prepared with jaggery as a natural sweetening agent. Preservatives, viscosity enhancers, and flavoring agents were added to improve stability and palatability. The prepared formulation was evaluated for physicochemical parameters such as pH, viscosity, density, organoleptic properties, and stability. The results indicated that the formulation possessed suitable pharmaceutical characteristics and acceptable stability. Therefore, the developed herbal syrup may serve as a potential supportive herbal formulation for Parkinson's disease management.

Keywords: Herbal syrup, formulation, evaluation parameters, Parkinson's disease, neuroprotective herbs.

Received 01.06.2026

Revised 02.07.2026

Accepted 12.07.2026

CITATION OF THIS ARTICLE

Sharma M, Gehlot S, Shrivastava S. Formulation and Evaluation of Herbal Syrup for the Management of Parkinson's Disease. World J. Clin. Pharmacol. Microbiol. Toxicol. Vol 12 [4] July 2026: 01-03

Introduction

Parkinson's disease is a chronic neurodegenerative disorder that affects movement and motor coordination. The disease is mainly caused by the degeneration of dopaminergic neurons in the substantia nigra of the brain, leading to reduced dopamine levels. Common symptoms include tremors, muscle stiffness, bradykinesia, and loss of balance (Kumar et al., 2026).

Conventional therapies such as levodopa provide symptomatic relief but may cause side effects with long-term use. Therefore, herbal medicines are being explored as alternative or complementary treatments due to their safety and therapeutic potential (Dwivedi & Chaturvedi, 2026).

Mucuna pruriens is a natural source of L-DOPA which helps restore dopamine levels. *Bacopa monnieri* possesses neuroprotective and cognitive-enhancing properties due to the presence of bacosides. *Withania somnifera* exhibits antioxidant and adaptogenic activities that help protect neurons from oxidative stress. The combination of these herbs may provide synergistic benefits in the management of neurological disorders (Lalwani et al., 2024).

The present study focuses on the formulation and evaluation of a herbal syrup containing these ingredients to improve patient compliance and therapeutic potential.

Material and Methods

Materials

The formulation consists of three main herbal ingredients: *Mucuna pruriens*, *Bacopa monnieri* (Brahmi), and *Withania somnifera* (Ashwagandha). *Mucuna pruriens* is included as a natural source of L-DOPA for anti-Parkinson's activity. Brahmi provides neuroprotective and cognitive-enhancing effects. Ashwagandha acts as an antioxidant and adaptogen to support neuronal health. Jaggery is used as a natural sweetening base to improve palatability. Guar gum is added as a viscosity enhancer to maintain syrup consistency. Preservatives such as sodium benzoate improve shelf life. Purified water (100 ml) is used as the vehicle for syrup preparation.

Table 1: Ingredients with properties

Ingredients	Role
<i>Mucuna pruriens</i>	Anti-Parkinson agent
<i>Bacopa monnieri</i>	Neuroprotective agent
<i>Withania somnifera</i>	Adaptogen
Jaggery	Sweetening agent
Sodium benzoate	Preservative
Guar gum	Viscosity enhancer
Flavouring agent	Improves taste
Purified water	Vehicle

Method

Plant material: - The plant materials used in this formulation include *Mucuna pruriens*, *Bacopa monnieri* (Brahmi), and *Withania somnifera* (Ashwagandha). The dried plant parts were procured from the local market and authenticated. All crude drugs were cleaned to remove impurities and foreign matter. The materials were shade-dried (if required) and finely powdered using a grinder. The powders were passed through a suitable sieve to obtain uniform particle size. Prepared powders were stored in airtight containers to prevent moisture absorption. These standardized plant materials were then used for extraction and formulation of the herbal syrup.

Extraction Procedure

The herbal powders were extracted using the decoction method. Accurately weighed quantities of each powder were mixed with distilled water and heated for 30–45 minutes until the volume was reduced. The mixture was then cooled and filtered through muslin cloth and filter paper (Tiwari et al., 2018).

Preparation of Herbal Syrup

The syrup base was prepared by dissolving jaggery in purified water with gentle heating. Guar gum was dispersed in the solution to increase viscosity. The herbal extracts were gradually added to the syrup base with continuous stirring to ensure uniform mixing. Sodium benzoate was added as a preservative, and a flavoring agent was incorporated to enhance palatability. The final volume was adjusted to 100 ml using purified water, and the prepared syrup was stored in amber-colored bottles (Khandave et al., 2025)

Evaluation Parameters of Herbal Syrup

The prepared herbal syrup was evaluated using the following physicochemical parameters (Shrivastava & Dwivedi, 2000):

Organoleptic Evaluation

The formulation was examined for color, odor, taste, and appearance.

pH Determination The pH of the syrup was measured using a pH paper.

Viscosity

Viscosity of the formulation was determined using a oswald viscometer.

RESULTS**Table:1 Organoleptic and Physicochemical Evaluation of Formulations (F1–F3)**

S.no	Test	F1	F2	F3
1.	Colour	Light brown	Brown	Dark brown
2.	Odour	Characteristic herbal odour	Pleasant herbal odour	Strong herbal odour
3.	Taste	Sweet & slightly bitter after taste	Sweet & mildly bitter	Sweet with noticeable herbal bitterness
4.	Viscosity (in cp)	Moderate viscosity (110.8cp)	Slightly high viscosity (194.2cp)	High viscosity (271.0cp)
5.	pH	5.6	5.8	6.0

The evaluation of formulations F1, F2, and F3 revealed noticeable differences in their organoleptic and physicochemical properties. All formulations exhibited a characteristic herbal profile, with a gradual increase in colour intensity from light brown (F1) to dark brown (F3). The odour ranged from characteristic to strong herbal, indicating variation in the concentration or interaction of herbal constituents.

In terms of taste, all formulations were predominantly sweet with varying degrees of bitterness, which became more pronounced in F3. Viscosity measurements demonstrated a progressive increase from F1 (110.8 cp) to F3 (271.0 cp), indicating enhanced thickness and consistency with formulation changes. The pH values of all formulations (5.6–6.0) were within an acceptable slightly acidic range, suitable for oral or topical herbal preparations.

Overall, F3 exhibited higher viscosity and stronger sensory characteristics, while F1 showed comparatively milder properties, suggesting that formulation composition significantly influences the final product attributes.

DISCUSSION

The herbal syrup formulation prepared in this study showed acceptable physicochemical properties. The use of jaggery improved the taste and patient acceptability of the formulation. Guar gum provided appropriate viscosity and improved the stability of the syrup.

The herbal ingredients selected for the formulation possess important neuroprotective properties. *Mucuna pruriens* provides natural L-DOPA which may help improve dopamine levels. *Bacopa monnieri* contributes antioxidant and cognitive-enhancing effects, while *Withania somnifera* provides adaptogenic and neuroprotective benefits.

The evaluation results confirmed that the prepared syrup had suitable pharmaceutical characteristics and remained stable under storage conditions.

Conclusion

The present study successfully formulated and evaluated a herbal syrup containing *Mucuna pruriens*, *Bacopa monnieri*, and *Withania somnifera*. The evaluation parameters such as pH, viscosity, density, and stability indicated that the formulation possessed acceptable physicochemical properties. Therefore, this herbal syrup may serve as a potential supportive formulation for the management of Parkinson's disease.

REFERENCES

1. Dwivedi, S., & Chaturvedi, P. (2026). From Tradition to Biochemical Innovation: Phytobioactive Compounds in Modern Neuropharmacology. *International Journal of Pharmacology*, 22(1) 48014.
2. Khandave, K. G., Mundhe, M. B., & Gaikwad, K. R. (2025). Formulation And Evaluation of a Polyherbal Syrup for Anti-Inflammatory Activity. *Journal of Drug Delivery & Therapeutics*, 15(6), 96.
3. Kumar, A., Shrivastava, A., Chaurasia, R., Barik, R., Gupta, P., Chaturvedi, P., & Dwivedi, S. (2026). Solid Lipid Nanoparticles: A Promising Candidate for Nose-to-Brain Targeted Delivery in Parkinson's Disease Treatment. *Current Nanomedicine*. 16, March, 10.2174/0124681873412762260109053755.
4. Lalwani, D., Dwivedi, S., Sharma, P. K., & Darwhekar, G. N. (2024). Role of Herbs as Sources of Therapeutic Agents for Innovative Drug Discovery. *International Journal of Pharmacy & Life Sciences*, 15(10), 1.
5. Shrivastava, D., & Dwivedi, S. (2020). Need of Development of Quality Control parameters of Anti-fungal Herbal formulations. *International Journal of Pharmacy & Life Sciences*, 11(7), 1.
6. Tiwari, S. S., Gupta, S. K., Dwivedi, S., & Dubey, R. (2018). Formulation and evaluation of in situ herbal gel containing aqueous and methanolic extract of fruits of *Quercus infectoria* Oliv. for vaginal application. *Journal of Drug Delivery and Therapeutics*, 8(5), 495-503.



The entire article published by World Journal of Clinical Pharmacology, Microbiology and Toxicology is licensed under a Creative Commons Attribution-Non Commercial 4.0 International License Based on a work at www.wjcpmt.com