WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 4, 849-854. Research Article ISSN 2277–7105

FORMULATION AND EVALUATION OF ORAL MEDICATED JELLIES FROM THE EXTRACT OF *MOLLUGO CERVIANA*

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Article Received on 14 Jan. 2026,
Article Revised on 04 Feb. 2026,
Article Published on 15 Feb. 2026,

https://doi.org/10.5281/zenodo.18661072

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How to cite this Article: Dr. Saranya N.*[1], Ms. Arthi P.[2], Mr. Akash K.[3], Ms. Divya S.[4], Ms. Malini Devi D.[5] (2026). Formulation and Evaluation of Oral Medicatedjellies From the Extract of Mollugo Cerviana. World journal of Pharmaceutical Research, 15(4), 849–854.

ABSTRACT

Herbal drug delivery systems are gaining increased attention due to their safety, effectiveness, and patient acceptability. The present study was aimed at formulating and evaluating oral medicated jellies using the extract of Mollugo cerviana as a novel and patient-friendly herbal dosage form. The plant extract was prepared using ethanolic and aqueous extraction methods and incorporated into a jelly base using agar agar as the gelling agent. The prepared jellies were evaluated for various physicochemical parameters including appearance, texture, pH, syneresis, weight variation, size uniformity, and dissolving time. The formulations exhibited smooth texture, uniform appearance, acceptable pH, minimal syneresis, and satisfactory dissolving characteristics. The overall findings suggest that oral medicated jellies of Mollugo cerviana can serve as a convenient and effective alternative to conventional oral dosage forms, especially for patients who have difficulty swallowing solid medications.

KEYWORDS: Mollugo cerviana, Herbal jelly, Oral drug delivery system, Agar agar, physicochemical parameter.

INTRODUCTION

Pharmacognosy is a distinct area within pharmaceutical science that concentrates on the

scientific examination of medicinal plants, natural compounds, and their therapeutic applications. Drugs derived from plants remain essential in healthcare systems due to their safety, effectiveness, and well-established historical applications. Mollugo cerviana, a medicinal species from the Molluginaceae family, has been extensively used in traditional medicine and is known to possess various pharmacological effects. This study involves creating a jelly formulation of the plant extract to improve palatability, enhance patient adherence, and facilitate administration. Herbal jelly formulations present several benefits, such as ease of preparation, pleasant taste, and stability, making them ideal for delivering plant-based extracts. Therefore, the creation of a jelly formulation containing Mollugo cerviana extract signifies a promising pharmaceutical strategy to effectively utilize its medicinal benefits in a patient-friendly dosage form.

MATERIALS AND METHODS

Collection and authentication

The plant was collected from Anna Nagar, Tirupathur district and was authenticated at ST XAVIER'S COLLEGE, Palayamkottai.

Extraction

Ethanolic Extraction

The whole plant of *Mollugo cerviana* was first shade dried and finely powdered. Approximately 30 g of the powdered material was placed in a cellulose thimble and subjected to Soxhlet extraction using 70% ethanol (300 mL). The extraction process was continued for 5 hours, during which nearly 35 siphon cycles were completed. The procedure was maintained until the solvent in the extraction chamber became almost clear, indicating adequate extraction of soluble constituents. The ethanolic extract obtained was then concentrated on a water bath to remove excess solvent, resulting in a thick crude extract that was preserved for formulation studies.

Aqueous Extraction

For aqueous extraction, 50–100 g of the dried powdered plant material was extracted using distilled water by the decoction method. The powder was boiled with 500–1000 mL of distilled water for 30–60 minutes, with intermittent stirring to ensure uniform extraction. After boiling, the mixture was allowed to cool and subsequently filtered through muslin cloth or Whatman No.1 filter paper. The filtrate was concentrated on a water bath at temperatures below 60°C to prevent degradation of constituents. The concentrated aqueous extract was then stored for

further formulation and evaluation.

Formulation of herbal jelly

Accurately weighed agar agar was hydrated and heated until dissolved, the extract was incorporated followed by gradual addition of simple syrup, citric acid, sodium benzoate, flavoring agents, and permitted colors, the final volume was adjusted with purified water to obtain a homogeneous jelly base, which was poured into pre-sterilized molds, allowed to set under cool conditions, and stored in airtight containers.

FIGURE 1: Herbal Jelly.

Evaluation of herbal jelly Stickiness and Grittiness

The texture of the medicated jelly, including stickiness and grittiness, is evaluated by gently rubbing a small quantity of the jelly between the fingers to assess smoothness and uniformity.

pH

The pH of the jelly is measured using a digital pH meter. About 0.5 g of the formulation is dispersed in 50 mL of water, and the pH value is recorded.

Syneresis

Approximately 10 g of freshly prepared jelly is weighed and stored at 25 °C, 4 °C, and 40 °C/75% RH for a specified period. Any separated liquid is collected and weighed. The percentage of syneresis is calculated as

% Syneresis = (Weight of separated liquid / Initial weight of jelly) × 100

A syneresis value of 0–1% indicates acceptable stability, while higher values suggest poor gel strength or instability.

Jelly Size Uniformity Test

Size uniformity of the jellies was evaluated by measuring the length, width, and thickness of ten samples using a Vernier caliper. The formulation was considered acceptable if the standard deviation of each dimension did not exceed 5%.

Dissolving Time Evaluation Test

Each jelly was placed in 100 mL of distilled water and continuously stirred. The time required for complete dissolution was recorded, with an acceptable dissolving time ranging from 10 to 30 minutes.

Weight Variation Test

Weight variation was assessed to evaluate the uniformity of the jellies. Ten individual jellies were weighed, and the average weight was calculated. The formulation was considered acceptable if the weight of each jelly did not deviate by more than ±7.5% from the average weight.

Physical Evaluation

The medicated jelly was visually examined for physical characteristics such as clarity, texture, transparency, and consistency**.**

Table 1: Evaluation Parameters of Oral Medicated Jelly.

Parameter	**Observation / Result Inference**
Physical appearance	Clear, smooth, uniform, translucent Indicates good formulation homogeneity
Texture	Smooth, non-gritty Confirms uniform dispersion of extract
Stickiness	Slight to non-sticky Acceptable with patient compliance
pH	5.5 – 6.8 Suitable for oral administration
Syneresis (%)	0 – 1% Indicates good gel stability
Jelly size uniformity	Within ±5% variation Ensures dose uniformity
Dissolving time	12 – 25 minutes Acceptable dissolution behavior
Weight variation	Within ±7.5%

RESULTS AND DISCUSSION

The oral medicated jelly was formulated using agar agar, sucrose, sodium benzoate with herbal

extract. The preparation is used in traditional system of medicines for various alignments like anti - pyretic, anti- inflammatory, anti -bacterial, anti – oxidant and Hepatoprotective. This dosage form was formulated for easy consumption and for the convenience to geriatric and pediatric patients. The oral medicated jellies prepared from *Mollugo cerviana* extract were smooth, clear, and uniform in appearance, indicating proper formulation and good mixing of ingredients. The jellies were non-gritty with only minimal stickiness, making them easy to handle and pleasant for oral use. The pH of the formulations was within a suitable range for oral administration, ensuring comfort and safety. Very little syneresis was observed, suggesting good gel stability. Uniform size, weight consistency, and satisfactory dissolving time further confirmed the quality and reliability of the formulation. These findings indicate that the developed herbal jellies possess suitable characteristics for use as an effective oral herbal dosage form.

CONCLUSION

The study successfully formulated oral medicated jellies incorporating the extract of Mollugo cerviana using a simple and reproducible method. The prepared jellies demonstrated good physical appearance, uniformity, stability, and acceptable physicochemical properties suitable for oral administration. Minimal syneresis, appropriate pH, and satisfactory dissolving time further confirmed the suitability of the formulation. Overall, the developed herbal jellies offer a patient-friendly and promising alternative to conventional oral dosage forms and may enhance the acceptability of herbal medications.

ACKNOWLEDGEMENTS

We sincerely acknowledge the management and faculty of PSV College of Pharmaceutical Science and Research, Krishnagiri, for providing the necessary facilities and support to carry out this research work.

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