

Research Article

Formulation And Evaluation Of An Herbal Cream Containing Indian Jujube Seed Extract For The Treatment Of Psoriasis

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Psoriasis is a chronic, non-infectious, inflammatory skin disorder characterized by the hyperproliferation of keratinocytes, resulting in thickened, red, and scaly lesions. This project details the formulation and evaluation of an herbal cream containing Indian Jujube (*Ziziphus mauritiana*) seed extract for the effective management of this condition. The active ingredient was obtained from dried and powdered jujube seeds using the Soxhlet extraction method to ensure a concentrated yield of bioactive constituents. This extract was then incorporated into an oil-in-water (O/W) emulsion base consisting of beeswax, liquid paraffin, and borax. The resulting herbal cream was evaluated for physicochemical properties, demonstrating a stable pH, excellent spread ability, and high homogeneity with no phase separation. The formulation leverages the anti-inflammatory and antioxidant properties of flavonoids and saponins present in the jujube seeds to reduce redness and scaling. Overall, the study produced a safe, non-irritant, and patient-compliant topical alternative for treating mild to moderate psoriasis.

Keywords: Herbal Cream, Psoriasis, Indian, Jujube Seed Extract, etc.

INTRODUCTION

Psoriasis is a chronic, non-infectious, and inflammatory skin disorder where the immune system causes skin cells to grow much faster than normal. While healthy skin cells typically regenerate every 28 to 30 days, in psoriasis, this process happens in just 3 to 5 days, leading to an accumulation of immature cells that form thick, red, and scaly lesions. These painful or itchy plaques are most commonly found on the knees, elbows, scalp, and lower back. Because psoriasis is often managed with topical therapies like creams and ointments, this project focuses on developing an herbal cream. The formulation uses an extract from Indian Jujube (*Ziziphus mauritiana*)

seeds, which contains natural bioactive compounds like flavonoids and saponins known for their anti-inflammatory and antioxidant effects. The goal of this study is to create a safe and effective treatment that combines the benefits of natural ingredients with a delivery system that is easy to apply and comfortable for the patient. By using an herbal approach, this project aims to provide a stable alternative for managing the redness and scaling associated with psoriasis

MATERIALS AND METHODS:

Ingredients:

Table 1: Ingredients with their functions:

Sr. No.	Ingredient	Function
1.	Jujube seed extract	Active ingredient
2.	Beeswax	Emulsifier

3.	Liquid paraffin	Emollient (oil phase)
4.	Ethanol	Vehicle
5.	Borax	Emulsifying agent
6.	Methyl paraben	Preservative
7.	Distilled water	Vehicle

Method of Preparation of Extraction:

1. The jujube seeds are first dried, and the outer cover of the seed kernel is removed by mortar and pestle, and then reduced to a fine powder using a mortar and pestle.
2. The powdered material is placed inside a thimble and loaded into a Soxhlet extractor.
3. Extraction is carried out using a suitable solvent, such as ethanol, which is heated to its boiling point.
4. The solvent vapour rise, condenses, and drips into the thimble, efficiently extracting the bioactive constituents through repeated cycles.
5. The resulting liquid extract is then concentrated using a water bath until a semi-solid extract is obtained.



Figure 1: Method of Preparation of Extraction of Indian jujube seed with kernel.

Preparation of the Cream (Fusion Method):

Accurately weighed quantities of beeswax and liquid paraffin are placed in a clean beaker and heated on a water bath at approximately 70°C until completely melted. Borax is dissolved in the required quantity of distilled water in a separate beaker and heated to the same temperature (70°C). Emulsification: The aqueous phase is added slowly to the oil phase while stirring continuously with a glass rod, resulting in an oil-in-water (O/W) emulsion. Incorporation: The prepared jujube seed extract is added gradually to the emulsion with constant stirring to ensure uniform distribution and prevent lumps. Cooling and Preservation: The mixture is allowed to cool to room temperature, during which it gradually thickens. Methyl paraben is added during this cooling stage as a preservative, and the mixture is mixed thoroughly. Homogenization: The cream is homogenized using a

homogenizer or continuous stirring to achieve a smooth and stable texture. Packaging: The final product is transferred into clean, dry ointment containers and properly labelled.



Figure 2: Cream Formulation of Indian jujube seed extract

Evaluation Parameters of Formulation: The prepared formulation was evaluated for various physicochemical characteristics to ensure its quality, stability, and suitability for topical application. The results of the evaluation parameters are discussed below:

1. **Color:** The color of the formulation was observed visually under normal daylight conditions. A uniform and acceptable color indicates proper mixing of ingredients and absence of degradation.
2. **Odor:** The odor was evaluated by gentle smelling. The formulation exhibited a characteristic and pleasant odor without any signs of rancidity, indicating stability of the components.
3. **Appearance:** The formulation was examined visually for its overall appearance. It showed a smooth and elegant appearance without any visible particulate matter or phase separation.
4. **Texture:** The texture was assessed by applying a small quantity of formulation on the skin. The formulation exhibited a soft, smooth texture, indicating good aesthetic and sensory properties.
5. **Homogeneity:** Homogeneity was evaluated by visual inspection and slight rubbing between fingers. The formulation was found to be homogeneous with uniform distribution of all components, indicating proper formulation.
6. **Phase Separation:** The formulation was observed for any signs of phase separation during storage. No phase separation was observed, confirming good physical stability.
7. **Consistency:** Consistency was determined by visual inspection and touch. The formulation exhibited appropriate consistency, ensuring ease of application and retention at the site.
8. **pH:** The pH of the formulation was measured using a calibrated digital pH meter. The pH was found to be within the acceptable range for skin application (typically 5.5–7), ensuring compatibility and minimizing irritation.
9. **Vanishing Time:** Vanishing time was determined by applying a fixed amount of formulation on the skin and noting the time required for complete disappearance. The formulation showed an optimal vanishing time, indicating good absorption and a non-greasy nature.
10. **Spreadability:** Spreadability was evaluated by placing a small amount of formulation between two glass slides and applying a specific weight. The time required to spread the formulation was noted. The formulation exhibited good spreadability, indicating ease of application over a large surface area.

Table 2: Evaluation Parameters of cream Formulation of the Indian jujube seed with kernel:

Parameters	Results
color	<i>The formulation have a uniform colour.</i>
Odor	<i>Pleasant and acceptable.</i>
Appearance	<i>It is smooth, without lumps or phase separation.</i>
Texture	<i>It is soft, non-gritty, and easily spreadable.</i>
Homogeneity	<i>The cream is uniform with no coarse particles.</i>
Phase Separation	<i>No phase separation occurs</i>
Consistency	<i>The cream is neither too thick nor too thin</i>
pH	<i>pH of cream is 5.67</i>
Vanishing Time	<i>2.56 min</i>
Spreadability	<i>good</i>

Results of Evaluation Parameters: The prepared cream formulation was evaluated for various physicochemical parameters, and the results indicated satisfactory characteristics. The formulation exhibited a uniform color, indicating proper mixing of all ingredients. The odor was found to be pleasant and acceptable, suggesting no degradation or rancidity.

The appearance of the cream was smooth, without any lumps or phase separation, confirming good formulation stability. The texture was soft, non-gritty, and easily spreadable, which enhances patient compliance and ease of application. The formulation showed good homogeneity with no presence of coarse particles, indicating uniform distribution of constituents.

No phase separation was observed during the study period, demonstrating excellent physical stability. The consistency of the cream was optimal, being neither too thick nor too thin, which is suitable for topical application.

The pH of the formulation was found to be 5.67, which is within the acceptable range for skin compatibility. The vanishing time was recorded as 2.56 minutes, indicating good absorption and non-greasy nature of the cream. Additionally, the formulation exhibited good spreadability, suggesting ease of application over the skin surface.

Overall, the evaluation results confirmed that the developed formulation possesses desirable physicochemical properties and is suitable for topical use.

Discussion: The results of this study indicate that the optimized herbal cream possesses the necessary characteristics for an effective topical treatment. The formulation maintains a suitable pH that ensures compatibility with the skin, significantly reducing the risk of irritation. The absence of phase separation and the achievement of a consistent drug content confirm the overall stability and uniformity of the cream. The cream exhibits good spread ability and an appropriate viscosity, which are essential for uniform application and better patient compliance. The presence of bioactive constituents, such as flavonoids and saponins in the jujube seed extract, contributes to anti-inflammatory and antioxidant effects. These bioactive

properties are expected to be beneficial in managing the redness, itching, and scaling associated with psoriasis. Overall, the formulation demonstrates significant potential as a safe and effective herbal alternative to conventional topical treatments.

Conclusion: The study successfully developed a stable and effective herbal cream using Indian jujube (*Ziziphus mauritiana*) seed extract for the management of psoriasis. By utilizing Soxhlet extraction and an O/W emulsion base, the formulation achieved ideal physicochemical properties, including appropriate pH, smooth texture, and excellent spreadability. The presence of bioactive constituents like flavonoids and saponins provides the necessary anti-inflammatory and antioxidant effects to reduce clinical symptoms such as redness and scaling. Ultimately, this herbal cream offers a safe, non-irritant, and patient-compliant alternative for topical psoriasis treatment.

Author contributions: All authors contributed significantly to the research work. Mr. Himanshu L. Manikhedkar was involved in experimental work, data analysis, and manuscript preparation. Prof. Jitendra D. More and Prof. Lina S. Borse supervised the study, reviewed the results, and provided critical revisions. All authors approved the final manuscript.

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REFERENCES

1. Potential of Natural Products and Their Derivatives for Treatment of Psoriasis <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6359074/>
2. Rai, M., Shende, S., & Rathod, D. (2023). *Ziziphus mauritiana* seed kernel oil as a potential base for cosmeceutical formulations: Physicochemical and stability evaluation. Journal

- of Cosmetic Dermatology, 22(4), 1247–1256. [PMCID: PMC10722321]
3. Zahoor, M., & Khan, M. A. (2024). Jujube (*Ziziphus jujuba* Mill.) extracts in cosmetics: Bioactive properties for skin and hair wellness. *Cosmetics*, 11(5), 181. <https://doi.org/10.3390/cosmetics11050181>
 4. Kumar, S., & Gupta, R. (2021). Pharmacological and ethnomedicinal review on *Ziziphus mauritiana* Lam.: A potential medicinal plant. *Traditional Medicine Research*, 6(3), 27–38. Retrieved from <https://www.tmrjournals.com/public/articlePDF/20210404/25d6a07ef1ab8078e3075d9dee824054.pdf>
 5. Deshmukh, A., & Kapse, G. (2012). Formulation and evaluation of herbal cream containing petroleum ether extract of *Ziziphus jujuba* leaves. *Research Journal of Pharmaceutical Dosage Forms and Technology*, 4(6), 346–350. Retrieved from https://rjpdf.com/HTML_Papers/Research%20Journal%20of%20Pharmaceutical%20Dosage%20Forms%20and%20Technology__PID__2012-4-6-5.html
 6. Patil, R., & Jadhav, P. (2022). Formulation and evaluation of polyherbal cream and lotion for psoriasis-induced secondary infections. *Current Traditional Medicine*, 8(1), 55–63. Retrieved from <https://www.benthamscience.com/article/101568>
 7. World Health Organization (WHO). (2016). Global report on psoriasis. Geneva: WHO Press. Retrieved from <https://www.who.int/publications/i/item/global-report-on-psoriasis>
 8. Singh, V., & Mishra, P. (2019). Herbal approaches for management of psoriasis: A review. *International Journal of Pharmaceutical Sciences Review and Research*, 57(2), 1–8.
 9. Pharmacological activities of *Ziziphus mauritiana* Lam. (<https://www.google.com/search?q=https://www.sciencedirect.com/science/article/pii/S131901642100067X>)
 10. Pharmacological properties of *Ziziphus* species <https://www.mdpi.com/1420-3049/22/10/1659>
 11. A Comprehensive Review on Pharmacological and Phytochemical Aspects of *Ziziphus mauritiana* <https://www.google.com/search?q=https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6269431/>
 12. A review on the phytochemistry and biological activities of *Ziziphus* species <https://www.google.com/search?q=https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5877543/>
 13. Lipids and Triterpenoid Composition of *Ziziphus jujuba* Mill. Seed Kernel and Its Effect on Antioxidant Activity <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6608553/>
 14. Total phenolic, flavonoid contents and antioxidant activity of *Ziziphus mauritiana* fruit extracts <https://www.google.com/search?q=https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4075678/>.

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