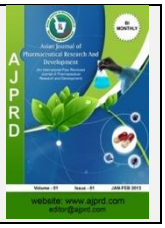
Available online on 15.6.2025 at http://ajprd.com

Asian Journal of Pharmaceutical Research and Development

Open Access to Pharmaceutical and Medical Research



Open Access

Review Article

Formulation of a Moisturising Hand Cream Using Shea Butter, Sodium Alginate, and Sweet Almond Oil: A Review

Samidha Singh, Kalash Upadhyay, Sarika Shrivastava, Jitendra Banweer

Department of Pharmacy, Sagar Institute of Research and Technology, Bhopal, M.P.

A B S T R A C T

Objective: This study aimed to formulate and evaluate a moisturising hand cream using natural ingredients—shea butter, sodium alginate, and sweet almond oil—to address skin dryness caused by frequent exposure to water, chemicals, or harsh environments.

Significance: With rising interest in clean-label and plant-based skincare, the project explores the potential of naturally derived ingredients as effective, skin-friendly alternatives to synthetic components in hand care formulations.

Methods: The hand cream was prepared using the fusion method, which involves heating the oil and aqueous phases separately, then blending them with continuous stirring to form a stable emulsion. Shea butter and sweet almond oil composed the oil phase, while sodium alginate was dissolved in the aqueous phase. The two were combined at equal temperatures and allowed to cool while mixing, forming a smooth, Homogenous cream without synthetic emulsifiers.

Results: The final formulation had a creamy, non-greasy texture that spread easily and was quickly absorbed. The pH ranged from 5.6 to 6.1, aligning with skin compatibility. Spreadability and washability were favorable, and stability studies over four weeks showed no significant changes in texture, color, or pH under ambient and accelerated conditions.

Conclusions: The fusion method successfully produced a stable, effective hand cream using only plant-based ingredients. The formulation met essential quality and performance parameters, highlighting the potential of natural components in developing safe, functional, and sustainable skincare products.

Keywords: Moisturising hand cream, Sodium alginate, Sweet almond oil, Fusion emulsification, Evaluation.

A R T I C L E I N F O: Received 19 Jan. 2025; Review Complete 11 March. 2025; Accepted 13 April 2025. ; Available online15 June. 2025

Cite this article as:

Singh S, Upadhya K, Shrivastava S, Banwer J, Formulation of a Moisturising Hand Cream Using Shea Butter, Sodium Alginate, and Sweet Almond Oil: A Review, Asian Journal of Pharmaceutical Research and Development. 2025; 13(3):105-107,

DOI: http://dx.doi.org/10.22270/ajprd.v13i3.1562

*Address for Correspondence:

Samidha Singh, Department of Pharmacy, Sagar Institute of Research and Technology, Bhopal, M.P.

INTRODUCTION

Hand creams have become a daily essential due to the increased need for hand hygiene and frequent exposure to elements that can dry out the skin. The stratum corneum—the skin's outermost layer—is especially prone to moisture loss, making the use of emollient-rich creams necessary.

As consumers become more ingredient-conscious, there's been a shift toward products made with naturally derived, skin-friendly materials. This review presents the formulation and testing of a moisturising hand cream based on three powerhouse ingredients: shea butter, sodium alginate, and sweet almond oil—each known for its unique benefits in skin care.

MATERIALS AND METHODS

Ingredients Used

- **Shea Butter**: Sourced from the African shea tree, this butter is rich in vitamins A and E, along with essential fatty acids. It's known for its ability to moisturize deeply, support collagen production, and soothe dry or irritated skin. It creates a moisture-sealing barrier that helps lock in hydration.
- **Sodium Alginate**: Derived from brown seaweed, sodium alginate helps to form stable emulsions and gives the cream its rich, smooth texture. It also forms a light film on the skin, helping to retain moisture and boost spreadability.

- **Sweet Almond Oil**: A lightweight, non-greasy oil packed with oleic and linoleic acids, as well as vitamins A and E. It nourishes the skin, helps improve complexion, and reduces irritation while providing a soft, silky after-feel.
- **Stearic Acid and Cetyl Alcohol**: These provide structure to the cream and help blend the oil and water phases. They thicken the formulation, giving it body without greasiness, and enhance stability.
- **Glycerin**: A well-known humectant that pulls moisture into the outer layers of the skin, glycerin helps improve skin suppleness and protects against dryness.
- **Triethanolamine**: Acts as a pH balancer and supports emulsion formation, helping the cream stay consistent and stable over time.
- **Preservatives (Methylparaben and Propylparaben)**: Added to prevent microbial growth and extend shelf life. These are commonly used in cosmetics for their broad-spectrum antimicrobial protection.
- **Distilled Water and Rose Water**: While distilled water serves as the base solvent, rose water adds a pleasant fragrance and mild anti-inflammatory properties, enhancing the cream's sensory appeal.

Formulation Procedure

The cream was prepared using the fusion method, which involves heating and combining separate oil and aqueous phases. First, oil-based ingredients like shea butter, sweet almond oil, stearic acid, cetyl alcohol, white soft paraffin, and liquid paraffin were measured and gently heated in a water bath to around 70°C until fully melted and homogeneous.

Simultaneously, the water phase was prepared by dissolving sodium alginate and glycerin in distilled water, followed by the addition of preservatives (methylparaben and propylparaben). This phase was also heated to 70°C to match the oil phase temperature, ensuring smooth emulsification.

The aqueous phase was slowly introduced into the oil phase under constant stirring with a mechanical mixer. Stirring was maintained as the mixture cooled, allowing the cream to emulsify and thicken naturally. Once the temperature dropped below 40°C, rose water was added to enhance fragrance, and triethanolamine was introduced to adjust pH and further stabilize the emulsion.

The final cream was smooth, well-blended, and free of air bubbles. It was then transferred into clean, airtight containers for evaluation.

Formulation Table

Ingredients	Quantity (%)
Stearic acid	4.0
Cetyl alcohol	1.0
Liquid paraffin	2.0
White soft paraffin	2.0
Glycerin	5.0
Triethanolamine	1.0
Methyl paraben	0.2
Propyl paraben	0.02
Rose water	5.0
Distilled water	q.s. to 100%
Shea butter	5.0
Sodium alginate	1.0
Sweet almond oil	3.0

Evaluation Parameters

Organoleptic Properties.

The cream appeared white and creamy with a smooth texture and a subtle, pleasant floral scent. It spread easily across the skin and absorbed well without a greasy feel.

pH Determination

Using a digital pH meter, the cream's pH was measured to be between 6.5 and 7.0—ideal for maintaining the skin's natural balance.

Spreadability

The cream exhibited excellent spreadability, which allowed for quick, even application. This enhances user comfort and ensures effective coverage.

Washability

The formulation washed off easily with water, making it convenient for reapplication throughout the day.

Stability Studies.

Over 30 days, the cream remained stable under various conditions, including refrigeration and accelerated aging. It showed no signs of separation, discoloration, or texture changes.

Table 1: Evaluation Table

S. No.	Test	Observation
1	Color	White
2	Odor	Pleasant floral
3	Texture	Smooth and creamy
4	pH	6.5 – 7.0
5	Spreadability	Good
6	Washability	Easily washable
7	Stability	No phase separation after 30 days

Discussion

The combination of shea butter, sweet almond oil, and sodium alginate created a hand cream that is not only effective but also aligned with the growing trend toward natural skincare. Shea butter delivered deep moisturization and skin protection, while almond oil softened and calmed irritated areas. Sodium alginate contributed to the smooth texture and helped retain moisture.

The evaluation showed that the cream's pH was compatible with human skin and that the product had an appealing texture, fragrance, and ease of use. The long-term stability results further validated the formulation's practicality for consumer use. This highlights the ability of natural ingredients to deliver results comparable to, or better than, synthetic counterparts in cosmetic formulations.

CONCLUSION

This review demonstrated the successful creation of a moisturising hand cream using shea butter, sodium alginate, and sweet almond oil through a straightforward fusion process. The resulting cream effectively hydrates, protects,

and soothes the skin while maintaining a non-greasy, elegant feel. It remained stable, pleasant to use, and skin-compatible over time.

As consumer demand continues to grow for safe, natural, and effective personal care products, this formulation offers a promising option for daily hand care. With further research, including longer-term testing and user trials, this type of cream could be refined and scaled for commercial use, providing a nature-powered solution to everyday skincare needs. The incorporation of sustainable ingredients also positions this formulation as an environmentally conscious choice. Its ease of preparation and favorable user experience make it suitable not only for personal use but also as a candidate for future market entry.

REFERENCE

1. Mazurek, B., Molska, A, & Podgórska, M. *Shea butter as a valuable raw material in cosmetic and pharmaceutical applications*. Molecules, 2019; 24(22):4031.
2. Vaughn, J. *Fatty Acids in Skin Care: How They Benefit Formulations*. Journal of Cosmetic Science, 2019; 70(3):189-200.
3. Aulton, M. E., & Taylor, K. M. G. (2017). *Aulton's Pharmaceutics: The Design and Manufacture of Medicines*. Elsevier.
4. Tadros, T. F. (2013). *Emulsion Formation and Stability*. Wiley-VCH.
5. Bajaj, S., Singla, D., & Sakhuja, N. Stability testing of pharmaceutical products. *Journal of Applied Pharmaceutical Science*, 2012; 2(3):129-138.
6. Chen, J., & Stokes, J. R. Rheology and tribology: Two distinctive regimes of food texture sensation. *Trends in Food Science & Technology*, 2012; 25(1):4-12.
7. Draelos, Z. D. (2010). *Cosmetic Dermatology: Products and Procedures*. John Wiley & Sons.
8. Barel, A. O., Paye, M., & Maibach, H. I. (2009). *Handbook of Cosmetic Science and Technology*. CRC Press.
9. Kolb, B., & Ettre, L. S. (2006). *Static Headspace-Gas Chromatography: Theory and Practice*. John Wiley & Sons.
10. Schreiner, M. *Lipid oxidation in shea butter and its implications for cosmetic formulations*. Journal of the American Oil Chemists' Society, 2006; 83(5):401-408.
11. Lambers, H., Piessens, S., Bloem, A., Pronk, H., & Finkel, P. Natural skin surface pH is on average below 5. *Skin Research and Technology*, 2006; 12(3):125-131.
12. Draget, K. I., Smidsrød, O., & Skjåk-Bræk, G. (2005). *Alginates from algae*. Polysaccharides and Polyamides in the Food Industry, 1, 1-30.
13. Daston, G. P. *Toxicology of parabens: A review of recent studies*. Environmental Research, 2004; 94(2):115-122.
14. Loden, M. *Role of topical emollients and moisturizers in the treatment of dry skin barrier disorders*. American Journal of Clinical Dermatology,2003; 4(11):771-788.
15. Soni, M. G., Carabin, I. G., & Burdock, G. A. *Safety assessment of esters of p-hydroxybenzoic acid (parabens)*. Food and Chemical Toxicology, 2002; 40(10):1335-1373.