iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 13 **Issue:** IX **Month of publication:** September 2025

DOI: https://doi.org/10.22214/ijraset.2025.74164

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue IX Sep 2025- Available at www.ijraset.com

Formulation and Evaluation Ayurvedic Moisturizer

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Abstract: ***The creation and assessment of an Ayurvedic moisturiser utilising natural and herbal substances with skin-improving qualities is the main goal of this study. Aloe vera, neem, turmeric, almond oil, coconut oil, and rose water were all included in the formulation; they were made using conventional emulsification techniques. A number of criteria, including pH, viscosity, spreadability, homogeneity, and stability, were assessed for the moisturiser. The findings showed no indications of irritation or microbiological contamination, good spreadability, efficient moisturization, and an appropriate pH. This Ayurvedic moisturiser is a viable substitute for commercially available synthetic skincare products since it is safe, effective, and environmentally friendly.***

Keywords: Ayurvedic moisturizer, herbal cosmetics, Aloe vera, neem, turmeric, herbal formulation, skin hydration, natural skincare, emollients, evaluation parameters.

I. INTRODUCTION

With origins in traditional systems like Ayurveda, the idea of skin care is as old as human civilization. The biggest and most exposed organ in the human body, the skin serves as a barrier to keep out dangerous radiation, microbes, and contaminants from the environment. A wide range of cosmeceutical solutions have been developed and expanded as a result of the exponential growth in knowledge regarding skin health in recent years[1-2].

Among them, moisturisers are a crucial component of skin care, helping to keep the skin hydrated, supple, and elastic. Interest in Ayurvedic formulations, particularly moisturisers made with plant-based components, oils, and medicinal herbs, has increased because to the global trend towards natural and herbal goods[3-4].

II. SIGNIFICANCE OF MOISTURIZATION

In dermatological and therapeutic skin care, moisturizing the skin is an essential step, not only a cosmetic one. The hydration of the skin is preserved, Tran's epidermal water loss (TEWL) is avoided, the barrier function is enhanced, and dryness, irritation, and cracking are avoided with the aid of moisturisers. Moisturisers can be made to contain active herbal ingredients that have antibacterial, anti-inflammatory, anti-aging, and therapeutic properties in addition to hydrating the skin. By naturally feeding the skin's surface and interior layers, Ayurvedic moisturisers provide a special emphasis on holistic health[5-6].

Understanding Ayurveda in Skin Care:

The epidermis, dermis, and subcutaneous tissue are the three main layers that make up human skin. The stratum corneum, the outermost layer, is principally in charge of preserving moisture. Dry, flaky, or damaged skin can result from lipid loss, exposure to irritants, or a loss of natural moisturizing factors (NMFs). By using emollients (like sesame oil and coconut oil), humectants (like honey and aloe vera), and occlusive (like beeswax and ghee), Ayurvedic moisturisers aim to naturally replenish these NMFs, avoiding TEWL and maintaining supple skin[7-8].

A. Skin Physiology and the Role of Moisturizers

The epidermis, dermis, and subcutaneous tissue are the three main layers that make up human skin. The stratum corneum, the outermost layer, is principally in charge of preserving moisture. Dry, flaky, or damaged skin can result from lipid loss, exposure to irritants, or a loss of natural moisturizing factors (NMFs). By using emollients (like sesame oil and coconut oil), humectants (like honey and aloe vera), and occlusive (like beeswax and ghee), Ayurvedic moisturisers aim to naturally replenish these NMFs, avoiding TEWL and maintaining supple skin[9-10].

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B. Ayurvedic Ingredients in Moisturizer Formulation

Several Ayurvedic herbs and oils are renowned for their skin-nourishing and moisturizing properties. These ingredients are rich in antioxidants, vitamins, and bioactive compounds that protect the skin from environmental stressors and aging.

1) Aloe vera (Kumari): Known for its hydrating and soothing properties. It contains mucopolysaccharides that help in retaining moisture.
2) Kumkumaditaila: A classical Ayurvedic oil made with saffron, sandalwood, and other herbs, known for enhancing skin texture and complexion.
3) Ashwagandha (Withania somnifera): Possesses anti-inflammatory and antioxidant effects, helping with skin aging and irritation.
4) Manjistha (Rubia cordifolia): A natural blood purifier and complexion enhancer.
5) Chandan (Santalum album): Provides cooling, anti-inflammatory, and antimicrobial properties.
6) Neem (Azadirachta indica): Fights skin infections due to its strong antibacterial and antifungal properties.
7) Sesame oil (Til taila): A powerful base oil in Ayurveda with deep penetrating, moisturizing, and detoxifying qualities.
8) Ghee (Ghrita): Offers natural emollient and skin rejuvenation properties.

These ingredients not only provide hydration but also help manage various skin conditions like acne, pigmentation, eczema, and premature aging[12-15].

C. Market Trends and Consumer Preference

Herbal, natural, and Ayurvedic cosmetics are becoming more and more popular in the worldwide skincare industry, particularly in the moisturizer category. Products devoid of parabens, sulphate, synthetic chemicals, and artificial perfumes are becoming more and more popular. Customers who favor safe and sustainable alternatives are drawn to Ayurvedic moisturisers because of its foundation in natural sciences and customized therapy. Furthermore, Ayurvedic moisturisers have become extremely popular in both Indian and international markets due to the growth of e-commerce and wellness influencers that advocate for herbal self-care practices[16].

D. Benefits of Ayurvedic Moisturizer over Synthetic Alternatives

- Biocompatibility: Herbal ingredients are more skin-friendly and less likely to cause allergic reactions.
- Holistic Action: Ayurvedic moisturizers often address underlying causes of skin conditions (like internal imbalances) along with surface symptoms.
- Eco-Friendly: Made using sustainable and biodegradable ingredients.
- No Harsh Chemicals: Free from harmful preservatives, synthetic dyes, and fragrances.
- Long-Term Benefits: Promote skin healing and rejuvenation without dependency[17-18].

E. Regulatory and Safety Considerations

Ayurvedic moisturizers must comply with guidelines laid out by regulatory bodies like:

- AYUSH Ministry (India) for classical Ayurvedic preparations.
- DCGI for cosmeceuticals and OTC products.
- BIS Standards for cosmetic testing.
- WHO-GMP norms for manufacturing units.

Additionally, toxicological studies, dermatological testing, and patch testing on volunteers ensure safety and efficacy before market launch[19-20].

III. LITERATURE SURVEY

1) Nema, N. K., Maity, N., Sarkar, B. K., & Mukherjee, P. K. (2011).[21]

"Matrix metalloproteinase, hyaluronidase and elastase inhibitory potential of standardized extract of Rubia cordifolia L. and its role in skin protection."

Journal of Ethnopharmacology, 137(3), 1307-1312.

This study evaluates the anti-aging and skin-protective potential of *Rubia cordifolia* (Manjistha), highlighting its use in skin care formulations including moisturizers.

2) *Aqil, F., Ahmad, I., & Mehmood, Z. (2006).*[22]
"Antioxidant and free radical scavenging properties of twelve traditionally used Indian medicinal plants."
Turkish Journal of Biology, 30(3), 177-183.
Highlights the antioxidant potential of herbs like *Azadirachta indica* (Neem), *Withania somnifera* (Ashwagandha), and *Ocimum sanctum* (Tulsi), important in Ayurvedic moisturizers.

3) *Singh, A., & Duggal, S. (2009).*[23]
"Neem: A therapeutic for all seasons."
Pharmacognosy Reviews, 3(5), 1-11.
Focuses on the wide-ranging dermatological benefits of neem, a common ingredient in herbal moisturizers.

4) *Kumar, N., & Bhandari, P. (2015).*[24]
"Evaluation of herbal cosmetic cream formulations containing natural oils and extracts."
International Journal of Drug Development and Research, 7(2), 33-40.
Provides a comparative evaluation of several herbal cream bases, supporting the rationale for oil-based Ayurvedic moisturizer formulations.

5) *Draelos, Z. D. (2012).*[25]
"Moisturizers: what they are and a practical approach to product selection."
Journal of Clinical and Aesthetic Dermatology, 5(7), 22–26.
Explains the mechanism of moisturization and emphasizes the importance of selecting natural emollients for skin barrier maintenance.

6) *Chanchal, D. & Swarnlata, S. (2008)*[26]
"Herbal cosmetics: Trends in skin care formulation."
Pharmacognosy Reviews, 2(4), 63–68.
Discusses the growing trend of incorporating herbs in skin care products, with specific mention of aloe vera and turmeric in moisturizers.

7) *Patel, R. P., & Naik, S. A. (2010).*[27]
"Herbal moisturizers: A review."
International Journal of Pharmaceutical Sciences Review and Research, 4(3), 95-99.
Reviews various herbal formulations used as moisturizers and their evaluation parameters.

8) *Pundir, R. K., & Jain, P. (2010).*[28]
"Formulation and evaluation of herbal moisturizer."
Asian Journal of Pharmaceutical and Clinical Research, 3(3), 84-86.
Describes the step-by-step formulation and evaluation of a herbal moisturizer using standard protocols.

9) *Sharma, P. V. (1994).*[29]
"Dravyaguna Vigyan."
Chaukhambha Bharti Academy, Varanasi.
Classical Ayurvedic text that categorizes herbs according to their skin benefits, taste (rasa), potency (virya), and metabolic effect (vipaka).

10) *Paliwal, S., & Sharma, S. (2013).*[30]
"Aloe vera: A review of recent scientific studies."
International Journal of Pharmaceutical Sciences and Research, 4(5), 1846–1855.
Focuses on the hydrating, anti-inflammatory, and soothing properties of Aloe vera in cosmeceutical preparations including moisturizers.

IV. FORMULATION

Aloe vera gel, coconut oil, almond oil, turmeric extract, neem extract, and beeswax were among the natural and herbal components used in the formulation of the Ayurvedic moisturiser. While essential oils like sandalwood were utilized for scent and medicinal properties, the water phase contained glycerin and rose water for hydration. To guarantee homogeneity, the oil and aqueous phases were heated independently before being combined while being constantly stirred. After cooling, the mixture was placed in sterile containers for storage. With as little artificial ingredients or preservatives as possible, the recipe sought to offer deep moisturization, nutrition, and defence against dryness and environmental harm.

V. EVALUATION PARAMETERS

To guarantee the quality, safety, and effectiveness of the developed Ayurvedic moisturiser, a number of criteria were assessed. Important testing included skin irritancy, homogeneity, viscosity, spreadability, and pH (optimal range: 5–6.5). To ascertain shelf life, stability tests were carried out under expedited circumstances. Color, texture, and other organoleptic characteristics were examined. In order to look for contamination, microbial testing was done. By using the mixture on volunteers and monitoring their hydration levels, the effectiveness of moisturization was also investigated. These assessment criteria aid in guaranteeing that the Ayurvedic moisturiser is stable, efficient, and appropriate for topical administration over an extended period of time on a variety of skin types.

VI. FUTURE SCOPE OF STUDY

The creation of more sophisticated Ayurvedic moisturiser formulas with Nano-herbal delivery methods for improved skin penetration and efficacy is part of the study's future scope. To determine treatment results and customer satisfaction, more clinical studies can be carried out on a bigger population. By adding certain plant extracts, the formulation may also be tailored for particular skin diseases like acne, psoriasis, or eczema. The product will also be in line with sustainable development objectives if the usage of eco-friendly and biodegradable packaging is investigated. There is enormous market potential for such Ayurvedic developments due to the rising demand for herbal and chemical-free skincare products worldwide[31-32].

VII. CONCLUSION

Excellent skin compatibility, hydration efficiency, and stability were proven by the Ayurvedic moisturiser created in this study. The calming, anti-inflammatory, and nourishing benefits were facilitated by the use of herbal components such as aloe vera, neem, turmeric, and natural oils. The product may be used as a natural substitute for synthetic moisturisers and is safe for frequent usage, according to evaluation findings. The recipe encourages the blending of contemporary cosmetic formulation methods with age-old Ayurvedic principles. This Ayurvedic moisturiser has enormous potential for commercial use and future development in the herbal cosmetics sector, given the rising consumer demand for skincare products free of chemicals.

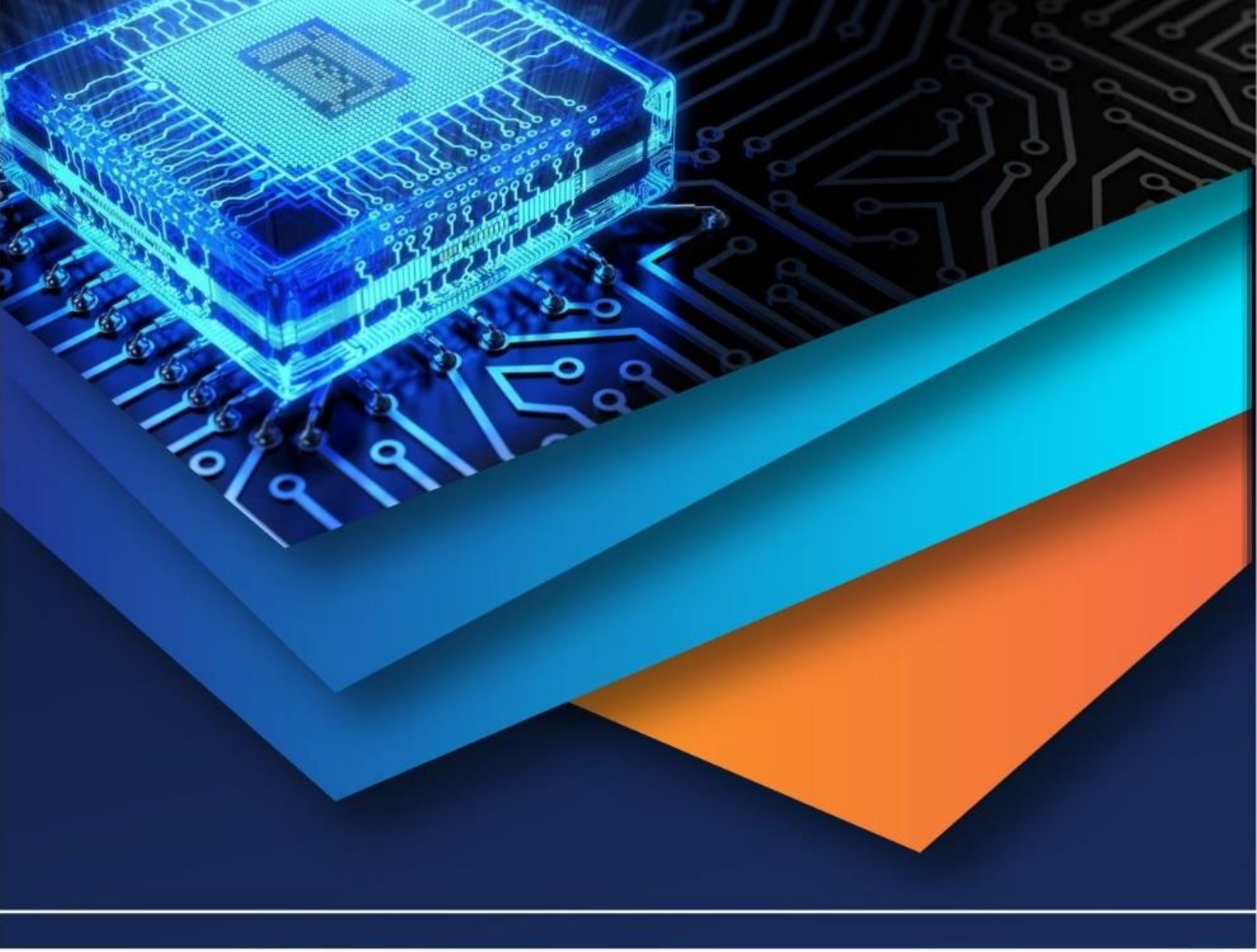
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