IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 3, December 2025
Impact Factor: 7.67

Formulation and Evaluation of Herbal Body Lotion

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Abstract: *Herbal cosmetics are becoming very popular because they are natural, safe, and beneficial for the skin. Herbal body lotions made with ingredients like aloe vera gel, rose water, almond oil, vitamin E, and beeswax keep the skin soft, healthy, and protected from dust, sunlight, and pollution. Ayurveda, the ancient Indian medical system, supports the use of herbal ingredients for improving skin health and overall well-being. These lotions help in moisturising the skin, improving blood circulation, and giving a fresh and glowing look. Nowadays, people prefer herbal products because they have fewer side effects and are friendly to the environment. With their healing and beauty-enhancing properties, herbal body lotions have become an important part of self-care and daily skincare routines. Evaluation parameters such as pH, viscosity, Spreadability, stability, and skin irritation tests are used to ensure product quality and safety.*

Keywords: Herbal Cosmetic, Herbal Lotion, Aloe Vera, Coconut oil, Rose water

I. INTRODUCTION

Natural substances similar to those found in cosmetic products are used in herbal formulations. The plants' characteristics are widely recognised. Take aloe vera, turmeric, etc. Rishi's invention of Ayurveda in India also signifies the highest quality of Ayurvedic herbs. (1) "Cosmetic" female slaves created them, which is where the word "cosmetics" originated. Cosmetics are applied to improve one's look. (2) Once confined to the domain of vanity, cosmetics have developed into essential instruments for self-expression and self-care. In all its forms, makeup enables people to express themselves creatively and accept their own beauty.(3) Herbal lotions are the pinnacle of herbal skincare because of their captivating scents and skin-loving qualities, which offer a sensory experience that goes beyond the ordinary.(4) Herbal lotions, also known as products, are made with a variety of acceptable cosmetic ingredients to create the basis, and only when one or more herbal ingredients are utilised to provide specific cosmetic benefits will they be described to as "herbal cosmetics."(5) Herbal lotions invite consumers to indulge in moments of self-care and relaxation with their fragrant mixtures of herbs and botanicals, elevating the skincare regimen to a sensory experience. (6) The information will be useful to regulatory bodies that oversee the safety of cosmetic compounds as well as to those involved in the creation of cosmetic goods. The Cosmetic Ingredient Review Expert Panel, an impartial panel of specialists sponsored by the industry that analyses the safety of cosmetic ingredients, will also find the material helpful. (7) Following production, the lotion will undergo testing to ensure its efficacy and safety. Ph, viscosity, spread ability, stability, and microbiological safety are among the parameters that these tests will examine. (8) The goal of the formulation process is to produce a lotion that is mild on the skin and provides a number of useful advantages, including hydration, defence against environmental aggressors, and assistance with minor skin issues including irritation, dryness, and acne. Analysing the product's physical and chemical properties, such as pH, viscosity, Spreadability, stability, and microbiological safety, is part of the evaluation step. (9)

DOI: 10.48175/IJARSCT-30467

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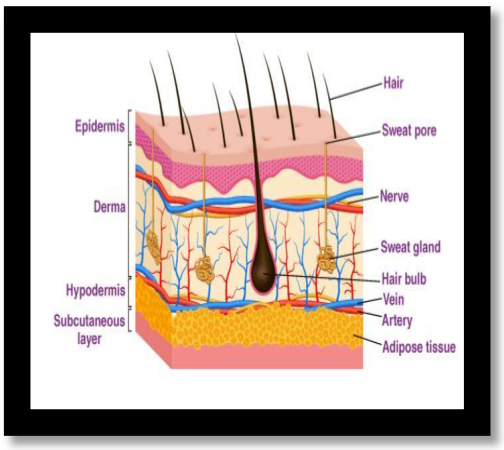

Structure of skin

The skin is said to be the largest organ in the body and has many functions. The skin helps with metabolism, sensing, protection, and bodily temperature regulation. One. The skin's two main regions are;

Epidermis

Dermis

Each person plays a distinct part in the overall function of the skin. The dermis is connected to the underlying hypodermis, sometimes referred to as subcutaneous connective tissue, which is where adipose tissue is housed. In gross anatomy, this hypodermis is referred to as the superficial fascia. [10] A complicated organ is the skin. On average, one square inch of skin contains more than 1,000 nerve endings, 20 blood arteries, and 650 sweat glands. [11]

SKIN LAYERS:

Epidermis

The epidermis is the outermost layer. This is the protective layer that gives skin its colour. Its main purposes are :[12]

To create new skin cells

To give the skin colour

To protect the body from the external environment.

The epidermis is devoid of blood vessels. The pigment known as melanin, which is produced by melanocytes, is what gives skin its colour. These are found in the epidermis and protect the skin from UV rays.

Dermis

The fibrous dermis is composed of collagen, elastic tissue, and other extracellular components like glands, hair follicles, nerve endings, and vasculature. [13]

Hypodermis

The hypodermis is your body's lowest layer of skin. It has several essential functions, such as storing energy, bridging the space between the dermis of your skin and your muscles and bones, protecting your body from harm, and insulating it. As you age, your hypodermis decreases and your skin starts to droop. [14]

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BODY LOTION : The entire human body is covered by the skin, an organ system that serves as the body's barrier against exposure to foreign substances. As such, skin health must be preserved. When wrinkles, cracks, dryness, dullness, and scaliness appear on the skin.


DRUG PROFILE:

Pharmacogenetic data of the following:

1) Aloe vera gel

Uses include moisturising, reducing acne and pimples, treating burn wounds, and acting as an antifungal and anti-inflammatory to lessen skin scarring, pigmentation, redness, and itching.

• It is rich in beta-carotene and vitamin Ç. As a result, it has anti-aging qualities; it also has antibacterial and anti-inflammatory qualities; it has cooling qualities; and it is abundant in minerals and antioxidants that promote healing. Additionally, it has calming and moisturising properties. The cooling properties of aloe vera provide a cooling sensation and prevent sunburn from developing. This drug is use as a moisturizer to treat or prevent dry, rough, scaly, itchy skin and minor skin. [11]

2) Coconut oil

The mature coconut (Cocos nucifera), which is typically found in tropical areas, yields coconut oil from its kernel or flesh. It's lauric acid, which offers antimicrobial, softening, and moisturising qualities. Additionally, it has antioxidants like vitamin E, which shields the skin from oxidative damage. Continue to drink plenty of water. Coconut oil is good for acne-prone skin because lauric acid helps destroy bacteria and fungi that cause acne. Products for hair care, lip balm, and lotion. It softens and nourishes skin and enhances the texture of hair. [7]

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3) Rose water

Rose petals are distilled to create rose oil, which is then used to make rose water. It promotes mild moisturization, lessens redness, and calms inflamed skin. Action Mechanism: Rose water's astringent qualities can help tighten pores and minimise excess oil, while its anti-inflammatory and antioxidant qualities warm and shield the skin. In addition, it's utilised as a spice in air fresheners and perfumes and in cookery. (6)

4) Almond oil:

Almond oil is a hydrating emollient that can help smooth and moisturise skin. Since almond oil is lightweight and non-irritating, it is often safe for sensitive skin. It might have antioxidant properties. It might have an anti-inflammatory effect. It might possess antimicrobial properties. It might possess antifungal qualities.(14)

5) Beeswax:

Bees and the hive generate beeswax. It reduces environmental stress, retains moisture, and forms a protective barrier on the skin. Uses: Because of its moisturising and protecting qualities, beeswax is frequently found in skin care products including lip balms, lotions, and creams. Candles, polishes, and other cosmetic compositions also contain it.(8)

6) vitamins E:

Tocopherol is a form of vitamin E found in many vegetable oils, nuts, seeds and green leafy vegetables. It prevents Oxidative damage from free radicals. It also has anti-inflammatory properties and supports the immune system. It also Improve the immune system and reduces inflammation. (7)

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Formulation:

Sr no	Name of Ingredient	F1	F2	F3	F4
1	Aloe vera gel	30ml	20ml	30ml	30ml
2	Coconut oil	20ml	30ml	20ml	20ml
3	Rose water	20ml	20ml	20ml	20ml
4	Almond oil	12ml	13ml	10ml	12ml
5	Beeswax	10g	10g	10g	9g
6	Borax	1g	1g	1g	2g
7	Vitamins E	2-3 ml (2 capsules)	2-3 ml	2-3ml	2-3ml
8	Distilled water	5ml	4ml	7ml	12ml

Collection of ingredients:

Aloe vera gel, coconut oil, rose water, almond oil or vitamins E collected from market.

Distilled water, Beeswax, borax collected from college chemistry Laboratory. All collected material is given in the table.

Method of preparation Herbal lotion:

Weigh all the ingredients as per formulation.

1.oil phase

Take **coconut oil**, **almond oil**, and **beeswax** in a clean beaker.

Heat gently in a **water bath (70–75 °C)** until the **beeswax completely melts** and a uniform oil phase is obtained.

Add **Vitamin E** to this warm oil phase and stir well.

2. Aqueous Phase

In another beaker, add rose water, aloe vera gel, and distilled water.

Warm the mixture to 70 °C (same temperature as oil phase).

Dissolve borax completely in this aqueous phase — it helps emulsify the cream.

3. Emulsification

Slowly add the aqueous phase to the oil phase with continuous stirring (use a glass rod or magnetic stirrer).

Keep stirring until the mixture becomes thick, creamy, and uniform.

4. Cooling and Finishing

Remove from the water bath and continue stirring while cooling to room temperature.

Once cooled, transfer to a sterile container.

Label the formulation properly (name, date, quantity, etc.).

5. Storage

Store in a cool, dry place away from sunlight.

Shelf life: approximately 3–6 months depending on hygiene and storage.

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Evaluation parameters of herbal body lotion:

Sr no	Test	Week1	Week2	Week3	Week4
1.	Appearance	Smooth	Smooth	Smooth	Smooth
2.	Colour	Light yellow	Dark white	Yellowish white	White
3.	Odour	Aromatic	Wild odour	Pleasant	Pleasant
4.	Ph	5.5	4	5	6.4
5.	Spreadability	Easily spreadable	Easily spreadable	Easily spreadable	Easily spreadable
6.	Irritancy test	No irritant	No irritant	No Irritant	No irritant
7.	Washability test	Easily washable	Easily washable	Easily washable	Easily washable
8.	Stability Test	No microbial growth	Microbial growth	No microbial growth	No microbial growth

1. Physical Appearance:

Week	**Week1**	**Week2**	**Week3**	**Week4**
Parameters	**F1**	**F2**	**F3**	**F4**
Colour	Yellowish white	Light yellow	Dark white	Yellowish white
Odour	Aromatic	Mild odour	Pleasant	Pleasant
Consistency	Good	Smooth	Smooth	Good

Description: Visual inspection for clarity, colour, and uniformity.

Method: The lotion should be smooth, free of any lumps or undissolved particles. The color should be Consistent, and the product should not show any separation over time. [11]

2. pH Determination:

Parameters	**F1**	**F2**	**F3**	**F4**
Ph	5.5	5	4	6.4

Description: The pH of the lotion is an essential factor, as it affects the stability and compatibility with the skin.

Method: The pH is measured using a calibrated pH meter. A 1 g sample of the lotion is dissolved in 10 mL of distilled water, and the pH is recorded. [12]

Expected Range: 4.5 – 6.5 (ideal for topical application).

3. Spreadability:

Parameters	**F1**	**F2**	**F4**	**F4**
Spreadability	Easily spreadable	Easily spreadable	Easily spreadable	Easily spreadable

Description: Spreadability assesses how easily the lotion can be applied and spread over the skin.

Method: A fixed amount (1 g) of the lotion is placed between two glass plates, and the area covered by the lotion is measured after applying a specific weight for a set time. [13]

Expected Result: The lotion should spread smoothly and cover a larger area easily

4. Stability Test:

Parameters	**F1**	**F2**	**F3**	**F4**
Stability Test	No microbial growth	Microbial growth	No microbial growth	No microbial growth

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Description: To determine the physical and chemical stability of the lotion over time, especially under Different conditions.

Method: The lotion is stored at various temperatures (e.g., 4°C, 25°C, and 40°C) for several weeks, and Periodic checks for phase separation, colour change, and Odor are performed. (14)

Expected Result: The lotion should remain stable, with no phase separation or significant changes in Appearance.

5. Skin Irritation Test:

Parameters	F1	F2	F3	F4
Irritancy test	No irritant	No irritant	No irritant	No irritant

Description: To evaluate the safety of the formulation for topical application.

Method: A patch test is conducted on a small area of skin (e.g., the forearm) to check for any allergic Reactions or irritation. The skin is observed for 48 hours after application. (15)

Expected Result: No irritation, redness, or allergic reaction should be observed.

6. Washability Test: For 10 minutes, a dollop of lotion was applied to the hand's skin and let it run under the force of the tap Water. It was observed when the lotion was fully eliminated.

Parameters	F1	F2	F3	F4
Washability	Easily washable	Easily washable	Easily washable	Easily

7. Moisturizing Effect (Skin Hydration Test): Description: To assess the moisturizing effect of the lotion.

Method: Skin hydration is measured using a craniometer before and after applying the lotion. Measurements are taken at specific intervals (e.g., 1 hour, 4 hours) after application. (15)

Expected Result: The lotion should show a significant increase in skin hydration, indicating its Moisturizing properties.

Summary:

Herbal body lotion is a topical formulation designed to moisturize, nourish, and protect the skin using natural plant-based ingredients. It commonly contains herbal extracts such as Aloe vera, beeswax, vitamins E, or Rose along with natural oils like Coconut oil, Almond oil, or Rose water and an emulsion base. These ingredients provide hydration, improve skin texture, and help in managing dryness and irritation without harmful synthetic chemicals. The formulation maintains suitable viscosity, stability, and skin compatibility, making it appropriate for daily use. Herbal body lotions are preferred due to their minimal side effects, eco-friendly nature, and enhanced skin healing properties derived from phytochemicals.

II. CONCLUSION

This study examined a herbal lotion formulation for organoleptic qualities (appearance, colour, and odour) as well as physiological criteria such as pH, Spreadability, ease of removal, and irritancy. The present work focusses on botanical extracts. Provide the nutrients required for healthy skin. Herbs have inherent antioxidant properties and can be included in skincare products. The study found that herbal cosmetics are safe and do not cause toxic or Unpleasant effects when compared to marketed cosmetic items. With herbal lotion, we can avoid skin disorders.

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