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### **Research Article**

# Formulation and Evaluation of Multipurpose Herbal Cream

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#### ABSTRACT

The growing demand for natural and safer alternatives to synthetic skincare products has led to increased interest in herbal formulations. This study focuses on the formulation and evaluation of a multipurpose herbal cream intended for skincare benefits such as moisturizing, anti-inflammatory, antimicrobial, and wound-healing activities. The cream was developed using a blend of medicinal plant extracts known for their therapeutic properties, including Aloe vera, Neem (Azadirachta indica), Turmeric (Curcuma longa), and Tulsi (Ocimum sanctum). A suitable cream base was prepared using natural oils, waxes, and emulsifiers to ensure stability and enhanced skin absorption. The formulation was evaluated for various physicochemical parameters such as pH, viscosity, spreadability, homogeneity, stability, and microbial load. The herbal cream demonstrated acceptable organoleptic properties, good consistency, and stability under accelerated conditions. Furthermore, antimicrobial testing confirmed its efficacy against common skin pathogens. The results suggest that the formulated herbal cream has the potential to be a safe and effective multipurpose topical product for daily skincare.

## **INTRODUCTION**

In today's world, where individuals are becoming increasingly mindful of both health and appearance, there is a noticeable shift in preference towards skincare products that are safe, gentle, and effective. While conventional skincare products are widely available and often produce quick results, they frequently contain synthetic chemicals that may cause skin irritation, allergic reactions, or long-term damage. (1) These concerns have driven consumers to explore safer, more natural alternatives, giving rise to the popularity of herbal skincare formulations. Among these, **herbal creams** are gaining significant attention due to their ability to offer a variety of therapeutic skin benefits using plant-based ingredients. (2) A **multipurpose herbal cream** is a topical preparation that integrates a combination of herbal extracts to address a range of skin

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concerns. These may include moisturizing dry skin, soothing inflammation, fighting microbial infections, accelerating wound healing, and providing antioxidant protection. The strength of such formulations lies in their ability to treat multiple skin issues holistically. The use of medicinal plants in skincare is deeply rooted in ancient systems of healing such as Ayurveda, Unani, and Traditional Chinese Medicine, where botanicals have long been used to maintain skin health and treat various skin disorders. (3) Modern research has begun to validate many of the traditional uses of herbs, leading to a renewed interest in herbal formulations developed through scientifically sound methods. By blending traditional herbal knowledge with modern practices, pharmaceutical researchers and formulators are now able to create effective, stable, and safe herbal creams suitable for everyday use. A carefully formulated herbal cream can nourish the skin deeply while shielding it from environmental aggressors and slowing down the signs of aging. (4)

Numerous plants have been scientifically recognized for their skincare properties. Aloe vera is celebrated for its ability to hydrate the skin and promote healing. Neem (Azadirachta indica) is known for its strong antibacterial and antifungal effects, making it ideal for treating acne and other infections. Turmeric (Curcuma longa) contains curcumin, which is well-documented for its antiinflammatory and antioxidant effects. Tulsi (Ocimum sanctum) offers antimicrobial and detoxifying benefits, helping to purify the skin and keep it healthy. (5) Formulating a multipurpose herbal cream involves the strategic selection of ingredients compatible herbal and the development of a base that enhances absorption and stability. The base typically consists of natural oils, butters, emulsifiers, and waxes that support the function of the active ingredients while providing a pleasant texture and appearance. (6)

Natural additives such as preservatives, antioxidants, and essential oils may also be included to extend shelf life and improve the cream's fragrance and user experience. (7)

Once developed, the herbal cream undergoes a series of evaluation tests to determine its quality, effectiveness, and safety. Key parameters include pH. viscosity, spreadability, consistency, appearance, fragrance, and microbial stability. (8) These tests ensure that the cream is suitable for skin application and maintains its properties over Biological evaluations, time. including antimicrobial and antioxidant testing, help confirm the therapeutic value of the cream. In addition, stability studies under different environmental conditions ensure the product remains effective throughout its intended shelf life. (9)

Developing a multipurpose herbal cream is an interdisciplinary effort, involving knowledge from pharmacognosy, pharmaceutics, microbiology, and cosmetology. It requires understanding not only the phytochemical profile of the herbs but also how these components interact with the formulation base and with each other. The goal is to create a skincare product that is both functionally effective and cosmetically elegant, meeting modern consumer expectations for quality, safety, and sustainability. (10) The surge in demand for natural and sustainable cosmetics presents a valuable opportunity for the expansion of herbal skincare innovations. Today's consumers are not only seeking results-they also prefer products that are chemical-free, cruelty-free, and eco-friendly. Herbal creams, with their natural origin and multifaceted actions, align perfectly with these values. Moreover, the use of herbal promotes the conservation ingredients of traditional knowledge systems and encourages responsible sourcing and cultivation of medicinal plants. (11)



In summary, the development and scientific evaluation of multipurpose herbal creams represent a forward-looking approach in natural skincare science. By leveraging the proven benefits of plant-based ingredients and applying rigorous formulation techniques, it is possible to produce high-quality herbal products that support skin health and well-being. This study is undertaken with the intention of creating an effective herbal cream using selected medicinal and evaluating it through various herbs physicochemical and biological parameters to ensure its appropriateness for topical use. (12) Beyond product development, this research emphasizes the broader importance of integrating herbal solutions into modern skincare practices.

As the global trend toward herbal cosmetics continues to grow, it is essential to support this movement with evidence-based research and standardized practices. Through this project, we aim to highlight the immense potential of herbal skincare formulations in providing safe, natural, and holistic skin treatment options, while promoting the ethical and sustainable use of natural resources. (13)

### **MATERIALS AND METHOD: -**

**Materials**: All crude drugs were collected from Rungta institute of pharmaceutical sciences College of pharmacy Campus, Bhilai CG. (14)

Role	Purpose	Ingredients
Base	Forms the cream structure	Beeswax, Liquid Paraffin, Borax
Moisturizers	Hydrates and softens the skin	Aloe Vera Gel
<b>Antimicrobial Agents</b>	Prevents microbial growth	Neem (Azadirachta indica) Extract
<b>Healing Agents</b>	Promotes skin repair	Tulsi (Ocimum sanctum) Extract
Fragrance	Adds a pleasant scent	Rose Oil
Preservatives	Extends shelf life	Methylparaben
Solvent	Dissolves other ingredients	Distilled Water

#### Table no. 5.1 Role of ingredient

Ingredient	Purpose	Quantity		
Beeswax	Cream base, provides structure	10 g		
Liquid Paraffin	Emollient, softens skin	15 mL		
Borax	Emulsifier, stabilizes the cream	0.5 g		
Aloe Vera Gel	Moisturizer, soothes skin	20 g		
Neem Extract	em Extract Antimicrobial, reduces acne			
Tulsi Extract	si Extract Healing agent, promotes skin repair			
Rose Oil	Rose Oil Fragrance, adds pleasant scent			
Methylparaben	Preservative, extends shelf life	0.2 g		
Distilled Water	Solvent, dissolves ingredients	50 mL		

Sr.	HERBAL	MEDICINAL IMPORTANT	PICTURE
No.	EXTRACT		
1	Turmeric (Curcuma longa)	Prevent and heal dry skin, Condition Such as eczema and acne	
2	Neem leaves	Neem leaves used to treat skin diseases like antibacterial and antifungal	
3	Aloe Vera	Moisturizer reduce pimple and acne	
4	Tulsi	Antibacterial	

#### Method of preparation: -

#### 1. Heating the Oil Phase:

- a. In a borosilicate glass beaker, combine liquid paraffin and beeswax.
- b. Heat the mixture to 75°C and maintain this temperature.

#### 2. Preparing the Aqueous Phase:

a. In another beaker, dissolve borax and methyl paraben in distilled water.

b. Heat this solution to 75°C using a water bath, stirring until all solid particles are dissolved.

## 3. Combining Phases:

a. Gradually add the heated aqueous phase to the heated oily phase while continuously stirring with a glass rod.

## 4. Incorporating Herbal Extracts:

a. Once both phases are mixed, immediately add the herbal extracts (Aloe Vera, neem, tulsi, turmeric, and ripe papaya) to the mixture.



- b. Continue mixing until a smooth cream is formed.
- 5. Final Touch:
- a. If desired, add a few drops of rose oil for fragrance and mix well. (15)

## Turmeric Extract: -

- Fresh rhizomes were cleaned, washed with denoised water, sliced and dried in the sun for one week and dried again at 105°C in a hot air oven for three hours.
- 2. Dried rhizomes were triturated using mortar and screened through a sieve with mesh 80 to obtain uniform powder with particle size of 0.18 mm.
- 3. The turmeric powder was stored in refrigerator to prevent moisture uptake.
- 4. The Soxhlet extraction was per-formed as follows: 15 g ground turmeric powder was weighed and embedded in a thimble and put in the Soxhlet apparatus which was gradually filled with acetone as the extraction solvent.
- 5. The extraction experiment was carried out at 60 °C within 8 h.
- 6. Upon completion of the extraction, the acetone was separated from the extract using rotary evaporator under vacuum at 35 °C. The residue was dried and weighed.





Figure no. 1

Aloe vera: Aloe Vera leaves that were mature, healthy, and fresh were picked and rinsed with distilled water. The outer part of the leaf was then dissected longitudinally using a sterile knife after proper drying in a hot air oven. The sterile knife was then used to extract the aloe vera gel, which is colourless parenchymatous tissue. The fibres and contaminants are then filtered out using muslin cloth. Then, in the process, the filtrate or filter product, which is a transparent aloe vera gel, was used



Figure no. 2





Figure no. 3

**Tulsi:** Tulsi leaves were harvested and dried in a hot air oven after being rinsed with distilled water. The leaves were then pulverised after they had dried properly. Then, in a volumetric flask, 1g Tulsi leaf powder was combined with 10 ml dimethyl sulfoxide and agitated for 3 days using a REMI RSB-12 mechanical shaker. The solution was then concentrated up to 5 ml and filtered using a muslin cloth to eliminate contaminants after being heated over a water bath at 80 to 100 degrees Celsius for a few minutes. The filtrate or filter product was then prepared using a clear solution or clear extract of Tulsi leaves.

**Neem**; Neem leaves were harvested, rinsed, and dried in a hot air furnace. The leaves were pulverised once they had dried properly. Then 5g powdered Neem leaves at 80-100 degrees Celsius. In a volumetric flask, dimethyl sulfoxide was agitated for 3 days using a REMI RSB- 12 mechanical shaker. The solution was then concentrated up to 20 ml on a water bath at 80-100 °C and filtered using muslin cloth to eliminate contaminants. Then, in the preparation, the filtrate or filter product, which is a clear solution or clear extract of Neem leaves,

#### Preparation of Multipurpose Herbal Cream :

**Aqueous Phase** – Dissolve sodium hydroxide & potassium hydroxide in water, add glycerol & preservative then heat it to 80°C.

**Oily Phase** – In another beaker take stearic acid, cetyl alcohol & isopropyl alcohol & heat to 75°C.Then gently pour the aqueous phase in oily phase & stir vigorously then add rose oil for fragrance. Prepared formulation were filled in a suitable container and labeled.



Figure no. 4

## **EVALUTION OF CREAM: -**

**pH Test:** - 0.5g cream was taken and dispersed in 50ml distilled water and then pH was measured by using digital pH meter.





Figure no. 5 pH Meter

**Spreadability Test:** - Two sets of glass slides of standard dimensions were taken. The multipurpose herbal cream formulation was placed over one of the slides. The other slide was placed on the top of the cream, such that the cream was sandwich between the two slides in an area occupied by a distance of 6 cm along the slide. 100gm weight was placed upon the upper slide so that the cream between the two slides was pressed uniformly to from a thin layer. The weight was removed & the excess of the cream adhering to the slides was scrapped off. The two slides in position were fixed to stand without slightest disturbance & in such a way that only the upper slide to slip off freely by the force of weight tied to it.



Figure no. 06 Spreadability Test

**Washability:** All the three formulations were easily washable with tap water.

**Irritancy:** Mark the area (1cm<sup>2</sup>) on the left-hand dorsal surface. Then the cream was applied to that area and the time was noted. Then it is checked for

irritancy, erythema & edema any for an interval up to 24hr & reported.

**Phase separation:** Prepared cream was kept in a closed container at a temperature of 25-100°C away from light. Then phase separation was checked for 24hr for 30 days.

**Homogeneity**: The formulations were tested for the homogeneity by visual appearance and by touch.

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