



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Research Article

Design, Development & Evaluation of Herbal Multipurpose Cream

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ARTICLE INFO

Published: 21 May 2025

Keywords:

Multipurpose Cream, Herbal
Formulation, Medicinal
Herb

DOI:

10.5281/zenodo.15480871

ABSTRACT

Herbal Medicine sometimes referred to as Herbalism or Botanical Medicine, is the use of herbs for their therapeutic or medicinal value. The herb is a plant or plant part valued for its medicinal, aromatic qualities. Herb plants produce and contain a variety of chemical substances that act upon the body. The Herbal Cosmetics defined as beauty products, which possess desirable physiological activities, such as skin healing, smoothing, and appearance, enhancing and conditioning properties because of herbal ingredients. The herbal multipurpose cream was prepared and evaluated with an aim to design and developed new formula for herbal multipurpose cream. Formulations were evaluated for various physicochemical parameters include appearance, type of emulsion, extrubility, pH, Texture, feel upon application, antimicrobial test, Spreadability, etc. This work mainly focuses on the assessment of the microbial quality of Formulated cosmetic preparations.

INTRODUCTION

The concept of beauty and cosmetics is as ancient as mankind and civilization. Indian herbs and its significance are popular worldwide. An herbal cosmetic have growing demand in the world market and is an invaluable gift of nature. Herbal formulations always have attracted considerable attention because of their good activity and comparatively lesser or nil side effects with synthetic drugs. Herbal cosmetics are defined as the beauty products which posses desirable physiological activity such as healing, smoothing

appearance, enhancing and conditioning properties because of herbal ingredient. Now-a-days the usefulness of herbs in the cosmeceutical production has been extensively increased in personal care system and there is a great demand for the herbal cosmetics. Cosmetics are the substances intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, and altering the appearance without affecting the body's structure or functions. But the usage of synthetic products becomes very harmful from long time for the youth as well as our

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



environment. Various synthetic compounds, chemicals, dye and their derivative proved to cause various skin diseases having numerous side effects. Thus we are using herbal cosmetics as much as possible. The basic idea of skin care cosmetic lies deep in the Rigveda, Yajurveda, Ayurveda, Unani and Homeopathic system of medicine. These are the products in which herbs are used in crude or extract form. These herbs should have varieties of properties like antioxidant, anti-inflammatory, antiseptic, emollient, anti-seborrheic, antikerolytic activity and antibacterial etc. Cosmetics are developed to reduce wrinkles, fight acne and to control oil secretion. For various types of skin ailments formulations like skin protective, sunscreen, antiacne, antiwrinkle and antiaging are designed using varieties of materials, either natural or synthetic. Cream is a polyherbal formulation that consists of extracts of Aloe barbadensis, Ocimum sanctum, Azadirachta indica, Curcuma longa, Ocimum sanctum etc. These herbs have been selected on the basis of a traditional system and scientific justification with modern uses. A herbal cream that can give effective protection to skin and free from any toxicity or toxic residue or any irritation when regularly used and should also be cosmetically acceptable.'

Herbal Cream:

The herbal approach of proper skin care is principally based on three essential steps.

- Cleanse
- Nourish
- Moisture

Whatever may be the type of skin; these three steps are external care of the skin to protect from constant effect of environment, stress and skins natural process of cell degradation decay^{2,3}.

Therefore, in order to help the skin look young and radiant. Exfoliation to remove dead skin cells.

- Epidermal stimulation for new cell growth.
- Improve capillary blood flow.
- Penetrating moisture and nutrients to replenish all layers of skin.
- Antioxidant properties for cellular rejuvenation and repair.

A cream is a topical preparation usually for application to the skin. Creams are semi-solid emulsions of oil and water. They are divided into two types: oil-in-water (O/W) creams which are composed of small droplets of oil dispersed in a continuous phase, and water-in-oil (W/O) creams which are composed of small droplets of water dispersed in a continuous oily phase. Oil-in-water creams are more comfortable and cosmetically acceptable as they are less greasy and more easily washed off using water. Water-in-oil creams are more difficult to handle but many drugs which are incorporated into creams are hydrophobic and will be released more readily from a water-in-oil cream than an oil-in-water cream. Water-in-oil creams are also more moisturizing as they provide an oily barrier which reduces water loss from the stratum the outermost layer of the skin^{4,5}.

Skin:



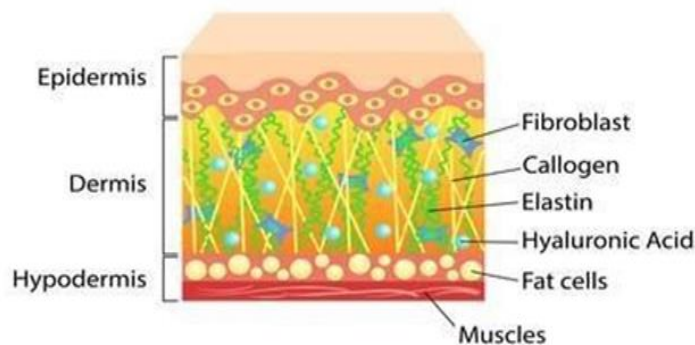


Figure 1: Skin Structure

The skin is the largest organ in the human body. For the average adult human, the skin has a surface area of between 1.5-2.0 square meters⁶. The thickness of the skin varies considerably over all parts of the body, and between men(1.3mm) and women(1.26mm) and the young and the old Skin is composed of three primary layers: the epidermis, the dermis and the hypodermis. pH of skin varies from 4-5 to 6⁷.

Epidermis: Epidermis is the outermost layer of the skin. The epidermis contains no blood vessels and is nourished by diffusion from the dermis. The main type of cell which make up the epidermis are keratinocytes, melanocytes, Langerhans cells and Merkel's cells. The epidermis helps the skin to regulate body temperature. Epidermis is divided into the following 5 sublayer or strata⁸:

- Stratum corneum

- Stratum lucidum
- Stratum granulosum
- Stratum spinosum
- Stratum germinativum (also called "stratum Basale")

Dermis: The dermis is the layer of skin beneath the epidermis that consist of epithelial tissue and cushions the body from stress and strain⁹. The dermis is tightly connected to the epidermis by basement membrane. It contain hair follicles, sweat gland, sebaceous gland, apocrine¹⁰.

Hypodermis: The hypodermis is not part of the skin, and lies below the dermis. It consists of loose connective tissue, adipose tissue and elastin. The main cell types are fibroblasts, macrophages and adipocytes. Fat serves as padding and insulation for the body¹¹.

HUMAN SKIN STRUCTURE

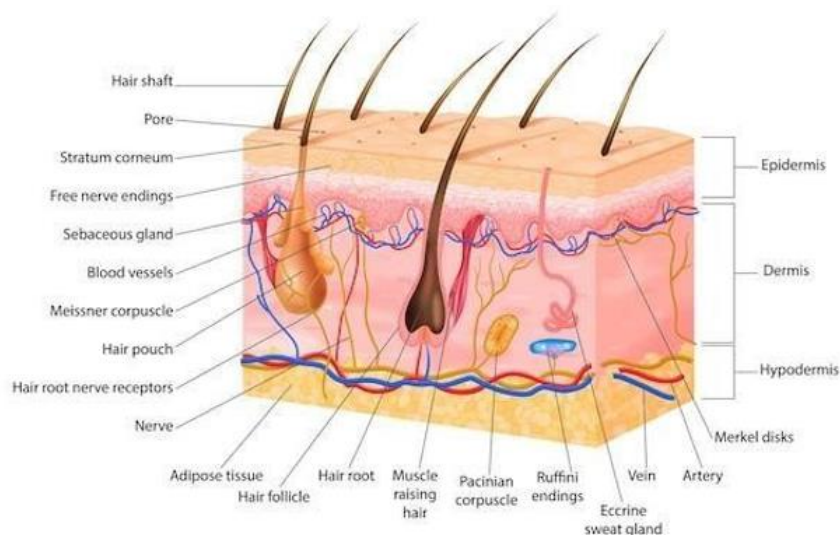


Figure 2: Structure Of Skin Layers




Aim And Objectives:





- 1) To set the formula for herbal cream by using different herbs.
- 2) To formulate herbal cream by using proper procedure.

- 3) To evaluate formulated product by using different tests like, pH, Spreadability, extrudability, etc

MATERIAL AND METHODS:

Table 1: Plants used for preparation of herbal cream.

Sr. No.	Common Name, Biological Source & Family	Part Used	Uses	Figures
1.	Aloe, <i>Aloe barbadensis</i> Liliaceae	Leaf (Powder)	Moisturizer, Cleansing, Soothing, Antiwrinkle, Anti-inflammatory, Enzyme action, Rejuvenating	
2.	Papaya, <i>Carica papaya</i> Caricaceae	Fruit (Pulp)	Antiwrinkle Cleansing, Enzyme action.	
3.	Amla, <i>Embolica officinalis</i> Euphorbiaceae	Fruit (Powder)	Antioxidant & Cleansing	

4.	Neem, <i>Azadirachta indica</i> Meliaceae	Leaf (extract)	Antiseptic, Astringent, Moisturizer, Treatment of Eczema, Scabies, Ringworm infection, Psoriasis	
5.	Tulsi, <i>Ocimum sanctum</i> , Labiatae.	Leaf (extract)	Antiseptic and Nutritive.	
6.	Turmeric, <i>Curcuma longa</i> Zingiberaceae	Rhizome (powder)	Colouring agent and Antiseptic, Antimicrobial, Lightning agent	
7.	Rose oil, <i>Rosa Centifolia</i> , Rosaceae	Flowers	Flavouring agent, Cooling agent, Emollient	

Formulation Component: -

Table 2: Formulation table of Herbal Multipurpose Cream.

Sr. No.	Ingredients	Quantity of Drugs	Role of Ingredients
1.	Beeswax	5	Cream Base
2.	Liquid Paraffin	6	Cream Base
3.	Olive Oil	13.6	Antiaging, Vehicle
4.	Rose Water	0.8	Flavouring Agent
5.	Borax	0.05	Preservative
6.	Aloe	7.5	Antiwrinkle, Moisturizer
7.	Papaya	5	Enzyme action, Cleansing
8.	Amla	4	Antioxidant, Cleansing
9.	Neem	1.0	Antiseptic, Astringent
10.	Tulsi	1.1	Antiseptic, Nutritive
11.	Turmeric	1.4	Colouring agent, Antiseptic
12.	Water	Q.S. upto 50gm	Vehicle

Formulation Of Herbal Multipurpose Cream: Preparation of Extract:







All the Herbals were weighed accurately & aqueous extraction had been done (10 times of the weight of the drug i.e. 5g in 50ml of water-on-

water bath at 80-100°C). As the solution concentrated up to 20 ml, filtration was done. Residue had been taken & volume was making up to 40 ml, again boiled. After remaining 20 ml was filtered and collected in the form of powder and the same procedure was followed again¹¹.

Table 3: Preparation Of Extracts

Sr. No.	Ingredients	Quantity	Figures
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1.	Neem	1.0 gm	
2.	Turmeric	1.4 gm	
3.	Tulsi	1.1 gm	
4.	Aloe	7.5 gm	
5.	Papaya	5 gm	
6.	Amla	4 gm	

Preparation Of Cream Base:

Procedure:

All ingredients were weighed accurately. Bees wax was melted into a porcelain dish and then liquid paraffin was added. After homogenization,

olive oil was added into above melted base. Borax was dissolved into sufficient quantity of water and it was warmed. The water was added drop by drop with vigorous stirring into the oily portion. Then melted mass was allowed to cool to get desired consistency¹⁵.

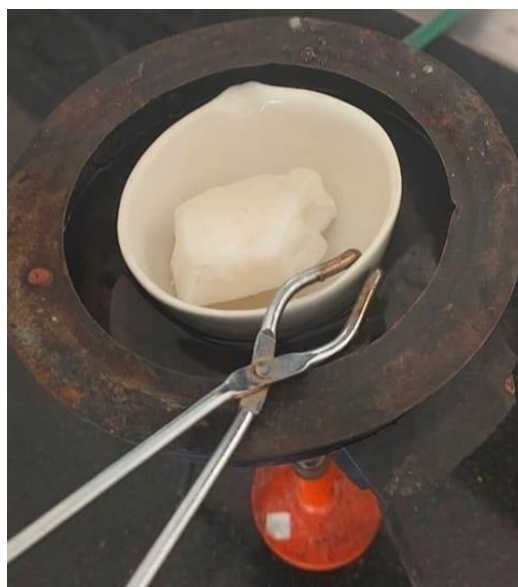


Figure 3: Preparation Of Base

Preparation Of Multipurpose Herbal Cream:

➤ Procedure:

Aloe, Papaya, Amla, Neem, Tulsi and Turmeric were weighed accurately and homogenize it

separately. Pulp of Papaya was smashed and was mixed with aloe and amla powder. Extract of neem and Tulsi was added into above mixture. The resulted mass was added into the base with constant stirring. Then turmeric powder was added in it and perfume was added¹⁶.



Figure 4: Mixing Of Herbals

Evaluation Of Cream:

1) Organoleptic evaluation¹⁷:

The cream thus obtained was evaluated for its organoleptic properties like color, odour, and state.

The appearance of the cream was judged by its colour and roughness and graded. Results are listed in Table No 4.

2) pH of the Cream¹⁸:



The pH meter was calibrated using standard buffer solution. About 0.5 g of the cream was weighed and dissolved in 50.0 ml of distilled water and its pH was measured.

3) Dye test¹⁹:

The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide covers it with a cover slip, and examines it under a microscope. If the disperse globules appear red the ground colourless. The cream is o/w type. The reverse condition occurs in wo type cream i.e. the disperse globules appear colourless in the red ground.

5) Spreadability²¹:

It is determined by glass slide and wooden block apparatus. Weight about 20gm was added to the pan and the time was noted for upper slide to move to separate completely from the fixed slide. An excess amount of gel 2gm was placed on this ground slide, then sandwiched the gel between this slide and a further glass slide having the fixed ground slide (there is provided with the hook). A 1kg weighted was located on the top of the slides for 5 minutes to give a homogeneous film of the gel and air between the slides was removed. Remove off the excess of the gel, The top plate was pull with the help of spring attached to the hook, the time required by the top slide to cover a distance of 7.5cm was be noted. A short or less interval shows better Spreadability. (Pawar DP, 2013) The Spreadability of gel was determine by using the above formula and was reported in table no7 .

$$S = M \times L / T$$

Where, S - Spreadability.

M -Weight in the pan which is tied to the upper slide.

L- Length moved by the glass slide.

T- Time taken to separate the slide completely each other. (Seconds)

6) Antimicrobial test:^{12,13,14}

Protocol: The Nutrient agar media was used. Staphylococcus aureus microorganism culture was used. Incubation time was setup for 24hrs.

Method: Agar bore well diffusion method.

Procedure: Staphylococcus aureus (Gram +ve bacteria) suspension was introduced in each plates & 40ml of sterile nutrient agar media was poured into each sterilized plates. The plates were agitated carefully to allow a homogenous mixing of the agar with the test organism. The plates were left on the flat solid surface & allow to harden. In each plate 1cup, 10mm in diameter was bored in the medium with cork borer. The disks of agar were removed by sterilized dissecting needle while being careful not to damage the cups. In each plate equal amount of cream formulation having same strength was placed in the cup & the plates were incubated at 37°C 2°C for 24hrs.in incubator. The entire operation was carried out under aseptic condition & zone of inhibition was calculated. The zone of inhibition obtained for prepared formulation was showed in figure.



Figures 5: Antibacterial Test Preparation

RESULT AND DISSCUSION:

1. Organoleptic evaluation²⁰: Organoleptic evaluation revealed that all formulations of herbal multipurpose cream have semisolid in nature, dark-brown and smooth in appearance and texture.

Table 4: Organoleptic Properties

Sr. No.	Evaluation Parameter	Status
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1.	State	Semi-Solid
2.	Colour	Faint Saffron
3.	Odour	Aromatic
4.	Texture	Smooth
5.	Type of Emulsion	O/W

1. pH, extrudability and Spreadability:

Evaluation related to pH, extrudability and Spreadability are summarized in Table 5 and

6. All the exhibit values in acceptable criteria.

Table 5: Evaluation Parameters of all formulation

Sr. No.	Evaluation Parameter	Acceptance Criteria	Result
1.	pH	4.5-6.0	5.89

Table 6: Spread-Ability

Formulation	Time (sec)
1st	12 sec

1. Antimicrobial test:^{12;13;14}

The antimicrobial study of formulation revealed that of herbal multipurpose cream possess good zone of inhibition. It had high value of zone of inhibition. (1.3cm)

Zone of inhibition of Multipurpose Herbal Cream

Sample: Formulation

Quantity of Sample: 0.25 gm

Zone of Inhibition Diameter (cm): 1.3cm

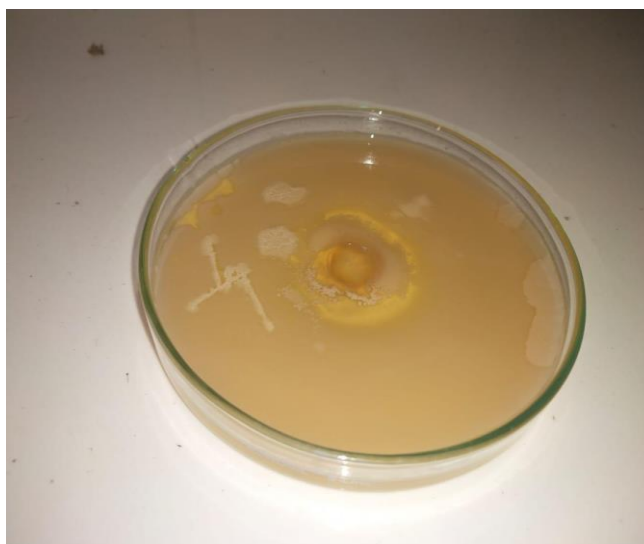


Figure 6: Multipurpose Herbal Cream in Staphylococcus Aureus Culture Formulation

CONCLUSION:

- a. The prepared multipurpose herbal cream exhibit good organoleptic properties.
- b. Extrudability, pH, and Spreadability observed in acceptable range.
- c. Antimicrobial study of reveals good zone of inhibition against Staphylococcus aureus, in that observed highest value(1.3cm).
- d. An advantage of formulation of such kind of multipurpose cream that it can overcome the drawbacks of other cream formulations as it can be used for various purpose topically for improving skin health and texture.

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HOW TO CITE: Prajwal Patil*, Design, Development & Evaluation of Herbal Multipurpose Cream, *Int. J. of Pharm. Sci.*, 2025, Vol 3, Issue 5, 3620-3630. <https://doi.org/10.5281/zenodo.15480871>

