

## FORMULATION AND EVALUATION OF HERBAL MOISTURIZING CREAM.

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### KEYWORDS

*Extraction, Drug,  
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### Abstract

The main objective is to formulate and evaluate moisturizing cream. Firstly, fresh part of plant collected after that extraction done so that proper formulation should be done. The importance of herbs in the cosmeceutical has been extensively increased in personal care system and there is a great demand for herbal cosmetics now days. Herbal cosmetics are a non-toxic, safe, effective formulation which improves patient compliance by the Utilization of herbal extracts and hence it would be highly acceptable then synthetic ones. The formulated cream has good results on spread ability, wash-ability, pH, irritancy and has good therapeutic effects. There is also no phase separation during observation of moisturizing cream. This prepared moisturizing cream is safe for use and it is developed from herbal products. Herbal cosmetics are widely accepted in a belief that it is safe for use and has no side effect. All the chemicals used in formulation makes the cream very stubble and helps in making good cream.

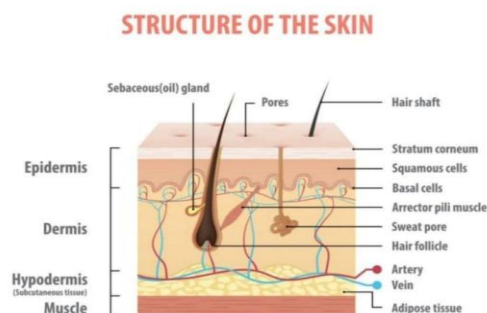
## INTRODUCTION:

**Skin-**The largest organ in the human body is skin. For the adult human the average surface area of the skin is between 1.5-2.0 square meters. The thickness of the skin varies over all parts of the body and between men (1.3 mm) and Women (1.26 mm). The skin is composed of three primary layers, the epidermis, the dermis and the hypodermis. The pH of the varies from 4.5 to 6.

**Epidermis:** It is the outer most layer of the skin. The Epidermis does not contain blood vessels and by diffusion from the dermis,

the epidermis gets nourished. The main type of cell which makes up the epidermis are keratinocytes, melanocytes, Langerhans cells and merkel's cells. Epidermis is divided into 5 sub layers.

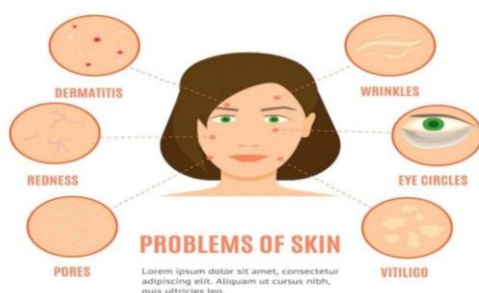
- Stratum corneum
- Stratum lucidum
- Stratum granulosum
- Stratum spinosum



**Fig. 1 Structure of skin**

**Dermis:** It is the layer of skin beneath the epidermis that Consist of epithelial tissue and cushions the body from Stress and strain. The dermis is tightly connected to the epidermis by basement membrane. It contains hair Follicles, sweat gland, sebaceous gland and apocrine.

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



**Fig. 2 Problems of skin**

## Moisturizing Cream:

Herbal moisturizing cream are the semi-solid dosage form which are applied on the skin to protect it from various skin problem. Moisturizing cream is prepared by using various Herbs powders like Beal, amla, Tulsi, Neem, Turmeric which have different properties and functions helps in skin protection. The prepared moisturizing cream has been evaluated for better efficacy and safety.

Moisturizing cream is a topical skincare product designed to hydrate the skin, soften its texture and repair its natural protective barrier. When applied to the body, the water contained in the cream is lost through Evaporation. Moisturizers are complex mixtures of chemical agents.

They are often occlusive, helping to retain Water in the skin after application. Additionally, humectants attract moisture, and emollients help smooth the Skin. (1- 2)

## PLANT PROFILE:

### 1) Bael leaves:

Bael leaves are obtained from Aegle marmelos, a medicinal plant belonging to the Rutaceae family. Bael is commonly known by the synonyms Bilva, Bengal quince, Stone apple, and Golden apple. The biological source of Bael leaves is the fresh or dried leaves of Aegle marmelos (L.) Corrêa. Bael leaves contain several important phytochemical constituents, including alkaloids (such as aegeline and skimmianine), flavonoids, tannins, coumarins (marmelosin), saponins, terpenoids, phenolic compounds, and essential oils. These constituents are responsible for the plant's antioxidant, antimicrobial, anti-inflammatory, and medicinal properties, making Bael leaves useful in herbal formulations such as moisturizing creams and other cosmetic preparations.



**Fig. 3 Bael leaves**

## 2) Amla fruit:

Amla (*Phyllanthus emblica*), belonging to the Phyllanthaceae family, is commonly known as Indian Gooseberry or Amalaki.

The biological source is the dried or fresh fruit of *Phyllanthus emblica*. It contains vitamin C, tannins, flavonoids, gallic acid, and polyphenols. In moisturizing cream, Amla acts as a natural antioxidant and skin-conditioning agent, helping to nourish, protect, and maintain healthy skin.



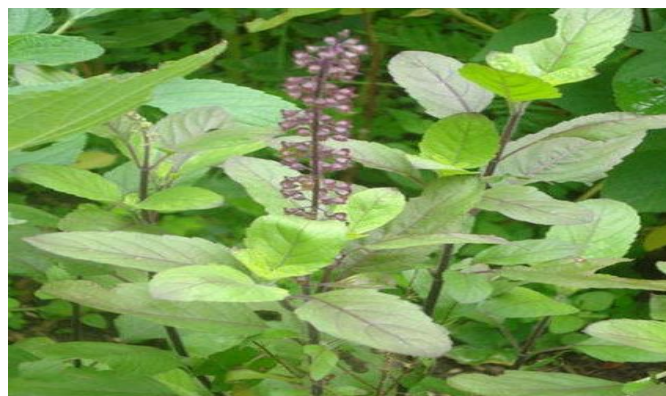
**Fig. 4 Amla**

## 3) Tulsi:

Tulsi (*Ocimum tenuiflorum* / *Ocimum sanctum*) belongs to the Lamiaceae family and is commonly known as Holy Basil.

The biological source is the fresh or dried leaves of *Ocimum tenuiflorum*. Tulsi contains eugenol, ursolic acid, rosmarinic acid, flavonoids, tannins, and essential oils. In moisturizing cream, Tulsi provides

antioxidant, antimicrobial, and anti-inflammatory properties, helping to protect and soothe the skin.



**Fig. 5 Tulsi leaves**

## 4)Neem:

Neem belongs to the family Meliaceae. Its synonyms include Indian Lilac and Margosa.

The biological source of neem is the dried leaves of *Azadirachta indica*. Neem leaves contain important chemical constituents such as azadirachtin, nimbin, nimbidin, quercetin, flavonoids, tannins, and alkaloids, which possess antimicrobial, anti-inflammatory, and antioxidant properties. These constituents make neem useful in herbal moisturizing creams and other skincare formulations.



**Fig. 6 Neem leaves**

## Turmeric:

Turmeric belongs to the family Zingiberaceae. Its synonym is Haldi.

The biological source of turmeric is the dried rhizome of *Curcuma longa*. Turmeric contains important chemical constituents such as curcumin, demethoxycurcumin, bisdemethoxycurcumin, volatile oils (turmerone), flavonoids, and tannins. These constituents provide antioxidant, anti-inflammatory, and antimicrobial activities, making turmeric useful in herbal moisturizing cream formulations.



**Fig. 7 Turmeric**

## Methods:

### a) Collection of Plant Material:

The fresh plant materials of *Senna Auriculata* flower and *Neem* leaves were collected from local area (Ghargaon, Shrigonda, dist. Ahilyanagar.) And authenticated at Department of Botany, Radhabai Kale Mahila Mahavidyalaya, Ahilyanagar.

### b) Preparation of powder:

Fresh leaves of *Aegle marmelos* (Bael), *Azadirachta indica* (Neem), and *Ocimum sanctum* (Tulsi), along with fruits of *Phyllanthus emblica* (Amla) and rhizomes of *Curcuma longa* (Turmeric), were collected and washed thoroughly with water to remove dust and impurities. The plant materials were shade-dried for 7–10 days until a constant weight was obtained. The dried materials were then ground separately using a mechanical grinder to obtain coarse powder. The powders were passed through a sieve to ensure uniform particle size and stored in airtight containers until used for extraction. (3- 4)

### c) Preparation of Extraction:

- Take the fresh leaves of *Aegle marmelos* (Bael), *Neem*, *Tulsi*, *Amla* fruit & turmeric.
- Wash with water & the shade drying.
- Make the paste of bael leaves, *Neem* leaves, *amla* fruit, *tulsi* leaves & turmeric.
- Heat the beakers 10- 115 minutes.
- Then filtered separately & stored in containers. (9)

**Table 1: Ingredients & their role**

| Sr. No. | Ingredients | Role                                            |
|---------|-------------|-------------------------------------------------|
| 1)      | Bael        | Anti-inflammatory and skin infection.           |
| 2)      | Amla        | Anti-ageing, hydrates and protects the skin.    |
| 3)      | Tulsi       | Helps to purifying the skin, provide smoothness |

|     |                 |                                                                  |
|-----|-----------------|------------------------------------------------------------------|
| 4)  | Turmeric        | Anti-ageing, reduce skin infection                               |
| 5)  | Neem            | Relives skin dryness, Itching and redness                        |
| 6)  | Bees wax        | Acting as an emollient                                           |
| 7)  | Borax           | Help maintain skin's pH balance and absorb excess oil.           |
| 8)  | Liquid paraffin | Acting as an emollient, a moisturizer, and a protective barrier. |
| 9)  | Methyl paraben  | Preservative                                                     |
| 10) | Rose water      | Fragrance                                                        |

### Phytochemical screening:(10)

#### Dragendroffs test:

Procedure: Take 2ml sample. Add few drops of dragendroffs reagent.

Observation: Reddish brown precipitate.

Inference: Presence of alkaloid

#### Lead acetate test:

Procedure: Take 2ml sample. Add few drop lead acetate solution

Observation: Yellow precipitate form.

Inference: Presence of flavonoid.

#### Ferric chloride test:

Procedure: Add 2ml sample. Add few drop ferric chloride solution.

Observation: Greenish- black coloration appear.

Inference: Presence of tannin.

#### Foam test:

Procedure: Add 2ml sample with water drops.

Observation: Shows foam formation.

Inference: Stable persistent foam.

#### Keller- killiani test:

Procedure: Add 2ml sample. Add few drops of glacial acetic acid. Add few drop ferric chloride. Add conc. Sulfuric acid

Observation: Brown ring precipitate.

Inference: Presence of glycoside.



Fig. 8 Phytochemical tests

**Table 2: Formula table:**

|     |                 |       |       |              |       |
|-----|-----------------|-------|-------|--------------|-------|
| 1)  | Bael            | 4gm   | 5gm   | <b>6gm</b>   | 6gm   |
| 2)  | Amla            | 3gm   | 3gm   | <b>4gm</b>   | 4gm   |
| 3)  | Tulsi           | 2gm   | 3gm   | <b>2gm</b>   | 2gm   |
| 4)  | Turmeric        | 1.5gm | 1.6gm | <b>1.6gm</b> | 1.6gm |
| 5)  | Neem            | 0.5gm | 1gm   | <b>1gm</b>   | 1gm   |
| 6)  | Bees wax        | 4gm   | 4.2gm | <b>4.5gm</b> | 4.5gm |
| 7)  | Borax           | 0.3gm | 0.3gm | <b>0.4gm</b> | 0.4gm |
| 8)  | Liquid paraffin | 10ml  | 10ml  | <b>10ml</b>  | 10ml  |
| 9)  | Methyl paraben  | 0.3gm | 0.4gm | <b>0.5gm</b> | 0.5gm |
| 10) | Rose water      | q.s.  | q.s.  | <b>q.s.</b>  | q.s.  |

## EVALUATION PARAMETER:

### 1. Physical Evaluation:

a) Color: The color of the cream was observed by visual examination.

b) Odour: The odour of cream was found to be characteristics.

c) State: The state was cream was examined visually

d) consistency; The formulation was examined by rubbing cream on hand manually. The cream having smooth. (11-12)

### 2. Irritancy:

This is used to check the Quality of materials as well as chemicals and

whether it is harmful to skin/mucosal or not. First of all, we have to mark area on left hand (dorsal surface). After we have to applied formulation of cream to that area and time was noted. Then we have to leave formulation for few minutes by this we can check for irritancy.

### 3. PH test:

Take 0.5 g of cream and dispersed it in 50 ml distilled water. Then Check its pH by Using digital pH meter



**Fig. 9 Herbal Moisturizing Cream**

#### **4. Washability:**

Wash ability test was Carried out by applying a small amount of cream on the hand and then washing it with help of tap water.

#### **5. Viscosity:**

Basically, the purpose of this test is to determine how the ingredients in cream will behave in real life. Its primary purpose is to evaluate efficacy The viscosity of the cream is measured to ensure it has the right consistency for easy application and absorption. Viscosity of cream was

done by using Brooke field viscometer.

#### **6. Phase separation:**

This test is basically checked in 24 hours to 30 hours. For this we have to put cream in a closed container, at a temperature (30-80degree Celsius). Keep the formulation away from light.

## **RESULT & DISCUSSION**

### **A. Physical evaluation:**

| <b>Formulation</b> | <b>Color</b>         | <b>Odour</b>          | <b>Consistency</b>            |
|--------------------|----------------------|-----------------------|-------------------------------|
| F1                 | Light green          | Characteristic        | Smooth & homogenous           |
| F2                 | Light yellow         | Characteristic        | Smooth & semisolid            |
| <b>F3</b>          | <b>Light- yellow</b> | <b>Characteristic</b> | <b>Smooth &amp; semisolid</b> |
| F4                 | Light yellow         | Characteristic        | Smooth & semisolid            |

## B. Measurement of pH:

| Formulation | pH         |
|-------------|------------|
| F1          | 6.0        |
| F2          | 6.2        |
| <b>F3</b>   | <b>5.8</b> |
| F4          | 5.7        |

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**Fig. 10 Herbal Moisturizing Cream**

## SUMMARY & CONCLUSION

### Summary:

An herbal moisturizing cream was formulated using extracts of bael, amla, tulsi, neem, and turmeric. These herbs were selected for their moisturizing, antioxidant, antimicrobial, and skin-protective properties. The cream was prepared by the emulsification method and evaluated for various parameters such as color, odour, consistency, pH, spreadability, homogeneity, irritancy, and stability. The

formulation showed good physical appearance, acceptable pH, smooth texture, and satisfactory stability. The herbal ingredients contributed to skin hydration and protection without causing irritation.

### Conclusion:

The formulated herbal moisturizing cream containing bael, amla, tulsi, neem, and turmeric was found to be stable, safe, and suitable for topical application. The cream exhibited good moisturizing properties, acceptable physicochemical characteristics, and no signs of irritation. Therefore, the formulation can be considered an effective herbal moisturizer for maintaining skin hydration and promoting healthy skin.

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