

## Research Paper On: Development and Evaluation of Polyherbal under Eye Cream

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Date of Submission: 05-07-2024

Date of Acceptance: 15-07-2024

### ABSTRACT

The eyes, additionally a focus of facial features, no longer best bring the total variety of human sentiment however even have a considerable impact on how one is perceived in phrases of health and splendor. Periorbital hyperpigmentation refers to the situation where there is an excessive production of melanin round the eye, ensuing in a darker shade than typical. The current observes ambitions to expand, examine, and behavior laboratory checks on an underneath-eye cream that contains herbal extracts. The motive of this cream is to effectively lighten the darkish regions across the eyes. The present-day study specializes in the improvement and assessment of a polyherbal under eye cream that includes Amla powder, Aloe vera, Turmeric, and Indian blackberry. those plant ingredients have been pronounced to possess beneficial properties which includes anti-tanning, anti-getting old, pores and skin whitening, anti-puffing, antioxidant, and moisturizing activities. moreover, they offer ability advantages which includes the discount of hyperpigmentation, fading of spots, removal of nice strains and wrinkles, and elevated ceramide production. The aforementioned residences of the herbal elements contribute to maintaining the skin across the eyes clean, moisturized, anti-puff, and free from pigmentation. numerous batches of formulations starting from F1 to F5 had been prepared with exceptional concentrations. The herbal below eye cream was then prepared and evaluated for its visual look, readability, pH, spreadability, irritancy, and extrudability. The results acquired have been found to be satisfactory.

**Keyword:** Polyherb, hyperpigmentation, dark circles, Syzygium cumini, Formulation

### I. INTRODUCTION





#### Dark Circles

Dark circles are a relatively prevalent condition that affects people of all ages under or around the eyes. It's also known as a darkening of the skin around or under both eyes that is uniform and circular. Dark circles can be caused by excessive saturation, shadows from bags under the eyes, infraorbital fat prolapse, shadows from infraorbital sagging and wrinkles, and thin, translucent skin over the orbicularis oculi muscle.

Saturation of the periorbital skin is veritably common in skin condition because of the increased melanin content. Genetics, rubbing, and seditious skin conditions similar as eczema may play a part in make the achromatism of the thin under-eye skin. <sup>(1,2,3)</sup>

currently sauces are extensively used as remedial agents because sauces are fluently available at less precious and nontoxic so the people have good trust in similar remedies. From the ancient time people are using sauces for cleaning, beautifying and to maintain healthy skin. colorful type of sauces is used for reduce dark circle like tomato, potato, cucumber, tea, orange etc. Jamun also used for reducing dark circle it contains flavonoids which is responsible for antioxidant. Antioxidant help to reduce dark circle. Jamun is a veritably common, large evergreen beautiful tree of Indian key. The scientific name of Jamun Eugenia jambolana Lam or Syzygium cumini Linn belongs to family Myrtaceae. Syzygium cumini leaves contain tannin, flavonoids and polyphenols which are responsible for antioxidant. <sup>(4)</sup>

**Table no.1: Benefits of herbs on under eye skin**

|   |  |
|---|--|
|    | <p><b>Aloe vera</b><br/>It can stimulate skin cells and aid in regeneration while improving the production of collagen</p>   |
|   | <p><b>Amla</b><br/>It is also rich vitamin C which helps in regenerating the skin cells and removing dark circles</p>  |
|  | <p><b>Syzygium Cumini</b><br/>Improvement in the health condition of eyes and skin.<br/>The heart is made healthier.<br/>Strengthening of the gums and teeth.<br/>Helps in the treatment of diabetes.<br/>Helps in the prevention of various kinds of infection.</p> |
|  | <p><b>Turmeric</b><br/>It is known to be anti-inflammatory in nature. It is also natural antioxidant it is not only lightens and purifies dark circle but also nourishes the delicate under eye area.</p>  |

## II. MATERIAL AND METHOD

### Extraction process:

The leaves of *Syzygium cumini* had been dried certainly at room temperature for a length of one week. The dried leaves had been then overwhelmed into a coarse powder and subjected to sequential extraction using ethanol and an aqueous solvent in a Soxhlet apparatus for a duration of 12 hours. The leaf extract was obtained using the Soxhlet extraction method. A round bottom flask was used to transfer 30g of the sample along with 250 ml of ethanol. The flask was then connected to a condenser using a bent tube, and the extraction process was carried out for 12 hours at a temperature of 100°C. Finally, the extract was evaporated to dryness using a rotavapor.<sup>(5,6,7)</sup>



### Preparation of polyherbal under eye cream:<sup>(8)</sup>

#### Phase A:

The oil segment become created by dissolving the emulsifying agent stearic acid in acetyl alcohol and then including propyl paraben. The aggregate become heated to seventy-five °C to ensure proper dissolution.

#### Phase B:

To prepare the aqueous phase, various water soluble compounds namely methyl paraben, triethanolamine, sodium hydroxide, & potassium hydroxide were added to water. The mixture was then heated to 75 °C to facilitate dissolution.

#### Phase C:

In the herbal phase, glycerin and aloe vera gel were combined with Indian blackberry leaves extract and Alma powder. After thorough mixing, vitamin E capsule and rose oil were added, followed by the appropriate amount of rose water. Once the aqueous phase had finished heating, it was added to the oil phase at the same temperature while continuously stirring to achieve a uniform cream. After the temperature dropped to 45 °C, the herbal phase was added and further mixed.

**Table no.1: Formulation of under eye polyherbal cream**

| Sr no | Ingridients       | E1F BATCH | E2F BATCH | E3F BATCH | E4F BATCH | E5F BATCH | Properties          |
|-------|-------------------|-----------|-----------|-----------|-----------|-----------|---------------------|
| 1     | Amla powder       | 0.1 gm    | 0.3 gm    | 0.5 gm    | 0.5 gm    | 1.0 gm    | Antioxidant         |
| 2     | Aloe vera         | 0.5 gm    | 0.5 gm    | 0.5 gm    | 0.5 gm    | 0.5 gm    | Anti aging          |
| 3     | Turmeric          | 0.5 gm    | 0.5 gm    | 0.5 gm    | 0.5 gm    | 0.5 gm    | Antiseptic          |
| 4     | Indian blackberry | 0.5ml     | 1.0ml     | 1.5ml     | 2.0 ml    | 2.5 ml    | Lighten dark skin.  |
| 5     | Vitamin-E         | 1gm       | 1gm       | 1.5 gm    | 2 gm      | 2 gm      | Dark circle remover |
| 6     | Rose water        | 3ml       | 3ml       | 3ml       | 3ml       | 3ml       | Vehicle             |
| 7     | Methyl paraben    | 0.004gm   | 0.004 gm  | 0.004 gm  | 0.004gm   | 0.004gm   | Preservative        |
| 8     | Triethanolamine   | 0.5ml     | 0.5ml     | 0.5ml     | 0.5ml     | 0.5ml     | PH adjuster         |
| 9     | Steric acid       | 0.5 gm    | 0.5 gm    | 0.5 gm    | 0.5gm     | 0.5 gm    | Emulsifier          |
| 10    | Distilled water   | 4ml       | 4ml       | 4ml       | 4ml       | 4ml       | Vehicle             |
| 11    | Glycerin          | 2ml       | 2ml       | 2ml       | 2ml       | 2ml       | Moisturizing agent  |

**Evaluation test for poly herbal under eye cream: (09-14)**

**A. Physical assessment**

The cream's color, scent, texture, and standard situation were assessed during this physiological assessment.

**B. Irritation**

A mark measuring 1cm<sup>2</sup> was made on the left-hand dorsal surface. The cream become then implemented to the affected region, & the time was noted. Subsequently, any signs of irritation or edema were evaluated and reported for a duration of up to 24 hours.

**C. Washability**

A small amount of cream turned into applied to the hand and then washed off with faucet water.

**D. pH**

The pH level became determined by way of the usage of a digital pH meter after spreading 0.5g of cream in 50ml of distilled water.

**F. Phase Separation**

The developed cream became stored in a sealed container, away from light, at a temperature of twenty-five to one hundred °C. Over the course of the next 30 days, the occurrence of section separation turned into observed every 24 hours. Any changes in phase separation were tested and confirmed.

**G. Spreadability**

The spreadability of the cream turned into measured by the time it took for two slides to split while positioned between the cream under a selected force. The shorter the time it took for the slides to separate, for the better spreadability. two widespread-sized glass slides have been used for this dimension. The cream mixture turned into implemented to at least one slide, and any other slide turned into positioned on top. The cream between the slides changed into flippantly unfold to shape a skinny layer whilst a weight or specific load was implemented to the top slide. Any extra cream at the slides became eliminated. the burden changed into then eliminated, permitting the higher slide to resultseasily glide off. The time it took for the top slide to fall off was recorded.

**Spreadability = m × l/t**

In which m represents the standard weight connected to the higher slide (30g) and l represents the duration of a glass slide (5cm).

**III. RESULT AND DISCUSSION:**

Assessment results of all the five formulations are gives below.

**A. Physiological evaluation**

in this test color, scent, texture and state of the four formulations were checked.

**Table No 2: In this test color, odour, texture, and state of the 5 formulations was checked.**

| Sr.no | Parameter | E1F       | E2F       | E3F       | E4F       | E5F       |
|-------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1     | Color     | Brown     | Brown     | Brown     | Brown     | Brown     |
| 2     | Odour     | Pleasant  | Pleasant  | Pleasant  | Pleasant  | Pleasant  |
| 3     | Texture   | Smooth    | Smooth    | Smooth    | Smooth    | Smooth    |
| 4     | State     | Semisolid | Semisolid | Semisolid | Semisolid | Semisolid |

**Irritancy**

A mark of 1 cm<sup>2</sup> should be made on the dorsal floor of the left hand. in the end, the cream changed into implemented to the affected place and the time became referred to. Following that, the

area was observed for irritancy and edema for a maximum of 24 hours, and the results were documented. Based on the findings, none of the five formulations (E1F, E2F, E3F, E4F, and E5F) exhibited any signs of irritancy or edema.

**Table No .3: Irritancy observations**

| Sr.no. | FORMULATION | IRRITANT EFFECT | EDEMA |
|--------|-------------|-----------------|-------|
| 1      | E1F         | NO              | NO    |
| 2      | E2F         | NO              | NO    |
| 3      | E3F         | NO              | NO    |
| 4      | E4F         | NO              | NO    |
| 5      | E5F         | NO              | NO    |



**C. Washability :**

Applying a little amount of cream to the hand and then washing it with tap water was used

to access wash ability. All five formulations were easily washable .



**Table No 4: Wash ability observations**

| Sr.no. | formulation | Wash ability    |
|--------|-------------|-----------------|
| 1      | E1F         | Easily washable |
| 2      | E2F         | Easily washable |
| 3      | E3F         | Easily washable |
| 4      | E4F         | Easily washable |
| 5      | E5F         | Easily washable |

**D. pH**

The pH of all the five formulations, E1F, E2F, E3F, E4F, and E5F was found to be closer to skin PH, indicating that they can be safely used on

skin the PH of all 5 formulations, E1F, E2F, E3F, E4F, and E5F, was found to be closer to skin PH, indicating that they can be safely used on skin.

**Table No.5: PH observation table**

| Sr.no. | formulation | PH   |
|--------|-------------|------|
| 1      | E1F         | 4.8  |
| 2      | E2F         | 4.85 |
| 3      | E3F         | 5.87 |
| 4      | E4F         | 5.47 |
| 5      | E5F         | 5.0  |

**E. Phase separation**

The prepared cream was maintained in a covered container away from light at a temperature

of 25-100 °C. After that, phase separation was tested for 24 hours and 30 days.. According to the findings, no phase Separation found.

**Table No.6: Phase separation observation table**

| Sr.no. | formulations | Phase separation |
|--------|--------------|------------------|
| 1      | E1F          | NO               |
| 2      | E2F          | NO               |
| 3      | E3F          | NO               |
| 4      | E4F          | NO               |
| 5      | E5F          | NO               |

**F. Spread ability**

The spread ability of the five formulations, E1F, E2F, E3F, E4F, and E5F , was tested, and it was discovered that for E3F, the time taken by the

three slides to separate is less, and as stated in the assessment time taken for separation of the three slides is better, therefore E3F exhibited greater spread ability.



**Table No .7: Spread ability observation table**

| Sr. no. | formulation | Time (min) | Spread ability (cm) |
|---------|-------------|------------|---------------------|
| 1       | E1F         | 1          | 2.6                 |
| 2       | E2F         | 1          | 2.8                 |
| 3       | E3F         | 1          | 2.8                 |
| 4       | E4F         | 1          | 3.0                 |
| 5       | E5F         | 1          | 3.2                 |

**Table No.8: Physiological Evaluation of herbal eye cream**

| Sr. No | NAME OF THE TEST | SPECIFICATION                | OBSERVATION      |
|--------|------------------|------------------------------|------------------|
| 1      | Color            | Brown                        | brown            |
| 2      | Odor             | Pleasant                     | Pleasant         |
| 3      | Texture          | Smooth, slippery             | Smooth, slippery |
| 4      | Aesthetic appeal | Excellent/good/ satisfactory | Excellent        |
| 5      | Cohesiveness     | High/ moderate/low           | moderate         |

|    |                             |                        |                  |
|----|-----------------------------|------------------------|------------------|
| 6  | Firmness                    | High/ moderate/low     | moderate         |
| 7  | Rub outs                    | Average 7-8 rubout     | Average 5 rubout |
| 8  | Spread ability              | Complete /moderate/low | Complete         |
| 9  | Residue left                | Low                    | Low              |
| 10 | PH                          | 4-7                    | 6                |
| 11 | Flow                        | Highly viscous         | Slightly viscous |
| 12 | Phase separation            | No                     | No               |
| 13 | Precipitation of ingredient | No                     | No               |

#### IV. CONCLUSION:

The aforementioned data research has been conducted in order to develop a formulation that contains traditional substances and examine their effectiveness in removing eye contours through in-vitro techniques. This study primarily focuses on the potential of an extract for cosmetic purposes, specifically in reducing dark circles in the under-eye area.

similarly, studies can be carried out to gain more accurate consequences, such as anti-tyrosine and anti-wrinkle properties. We prepared five batches of our herbal cream, namely, E1F, E2F, E3F, E4F, and E5F using homogenous blending. these 5 batches were estimated for numerous parameters such as appearance, pH, and viscosity. All five formulations (, E1F, E2F, E3F, E4F, and E5F) exhibited accurate appearance, pH, and no phase separation. moreover, these formulations confirmed no redness or inflammation for the duration of the irritancy take a look at and have been without difficulty washable. furthermore, all five formulations, (E1F, E2F, E3F, E4F, and E5F) remained stable at room temperature. We applied five natural substances that proven giant various activities. based at the consequences, we can conclude that each one 5 formulations (, E1F, E2F, E3F, E4F, and E5F) are stable and can be safely applied to the skin.

#### ACKNOWLEDGMENT

We express our honest gratitude to P. R. Patil Institute of Pharmacy Talegaon sp. for providing all facilities to require for completion of our work.

#### CONFLICT OF INTEREST

The author has no Conflict of Interest

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