Formulation and Evaluation of Poly Herbal under Eye Cream

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ABSTRACT:
To formulate and evaluate poly herbal cream using aloe vera gel, extracts of Haritaki, potato starch and Amla powder were used. The cream was prepared by using the cream base that is stearic acid, cetyl alcohol, Haritaki, potato starch, methyl paraben, distilled water, rose oil, aloe vera gel, extracts of Haritaki, potato starch and Amla powder. The cream was prepared by using the homogenous mixing of all the excipients and the herbal extracts. By using homogenous mixing developed four batches of our herbal cream were prepared namely F1H, F2H, F3H and F4H. All four batches were evaluated for different parameters like appearance, pH and viscosity. All the four formulations F1H, F2H, F3H and F4H showed good appearance, pH, adequate viscosity and no phase separation was observed. Also, the formulations F1H, F2H, F3H and F4H showed no redness and irritation during irritancy study and they were easily washable. All the four formulations F1H, F2H, F3H F4H were stable at room temperature. We used four herbal ingredients shows significant various activities. Based on the results, we can suggest that all the four formulations F1H, F2H, F3H and F4H were stable and can be safely used on the skin.

Keywords: Poly herbal under eye cream, Aloe Vera, Haritaki, Potato Starch, Amla Powder, Almond Oil.

INTRODUCTION:
Creams are circumfluous conflation lozenge forms containing further than 20% water or unpredictable factors and generally lower than 50% hydrocarbons, waxes as vehicles (1)

Cream is classified-

1) Oil in water
2) Water in Oil

All causes of dark circles under the eyes includes (2)
• Poor sleep.
• Disinclinations, including hay fever
• Hyperactive saturation, which happens when the body produces further melanin
• Reduced situations of adipose towel around the eyes
• Thinning skin under the eyes
• Anemia from iron insufficiency
• Overexposure to sun
• Frequent rubbing of the eyes
• Aging
• Smoking
• Inherited genes
• Thyroid conditions
• Dehumidification
• Dermatitis
• Eye drop treatment for glaucoma

**Advantages of Herbal cream:**

- It’s helps to skin glow.
- Herbal cream has pure and organic ingredients.
- They are free from side effects or minimize the side effects.
- Herbal cream is easily available in market and suitable for all skin types.
- They also help to reduce skin damage, dryness of skin completely.
- To cure the skin irritation the herbal cream is really useful.
- They have no synthetic and harmful additives.
- Herbal cream for skin glow is made to strengthen the skin follicles by giving essential oils.
- They also nourish all types of skin.

**Disadvantage of synthetic cream:**

- Synthetic cream may leads to skin breakage.
- Overuse of synthetic cream can clog skin follicles.
- Infrequent skin washing can cause scaly skin.
- Ingredients like sulfates increase skin sensitivity and strip skin of their natural oil cause dryness.
- Paraben increase risk of skin cancer.
- Alcohol makes your skin dry and brittle.
- May have less natural appearance movement and feel.
- Too much use can cause skin dryness.
- It also can cause headache and vertigo or soreness in eyes, nose, throat and lungs.

The main aim of our work is to develop a herbal cream which can give good and best effect we have use polyherbal ingredient our preparation like

- **Haritaki powder** - We have used herbal ingredients in our preparation which are used to reduce pimples and acne, and it is an anti-oxidant.
- **Potato starch powder** - reduce skin diseases like dry skin, wrinkles, rashes etc. and also glow and bright to the face.
- **Amla powder** - is used as glowing skin, it gives vitamin c and it is also used to reduce pigmentation, redness and itching of the skin
- **Aloevera gel** - moisturizer, reduce acne and skin irritation.
- **Almond oil** - Almond oil used to lighten the dark circles under eyes and reduce under-eye puffiness. It shows anti-inflammatory and antioxidant properties. Almond oil is used to keep skin elegant.

In market there are large no of eyes cream is currently available. But in marketed eye cream have side effects like redness, irritation, itching. To make activities from naturally occurring traditionally plant materials belong to Ayurvedic.
HARITAKI

**Scientific name** - Terminalia chebula  
**Family** - Combretaceae  
**Higher classification** - Tropical almond  
**Order** - Myrtales  
**Kingdom** - Plantae  
**Rank** - Species  
**Part Used** - Fruit  
**Height** - 15-25 m  
**Leaves** - Leathery, oval leaves have a downy  
**In summer** - White flower  
**Uses** - Antioxidant

**PREPARATION OF HARITAKI**

50 gm of Ink nut (Haritaki) crack and open the nuts.  
Remove the seeds; Take this in mixture/mortar pestles.  
Extracted powder transfer into airtight container.

**POTATO STARCH**

**Fig no.1**

**Fig no.2:** Potato starch
Scientific name – Solanum tuberosum

Family – nightshade

Higher classification – Nightshade

Order – Solanales

Kingdom – Plant

Extraction Method – Extraction \(^{(13)}\)

Part Used – Fruit

Height – 100 cm

**EXTRACTION OF POTATO STRACH**

Sweet potato

↓

Washing of tubers

↓

Peeling

↓

Washing

↓

Grinding

↓

Sieving

↓

Extraction

↓

Dewatering

↓

Wet starch

↓

Drying

↓

Potato starch
AMLA POWDER

![Amla powder](image)

Scientific name – Phyllanthusemblica

Family – Phyllanthaceae

Higher Classification – Leaf flower

Order – Malpighiales

Kingdom – Plant

Extraction Method – Dry extraction method

Part Used – Fruit

Height – 1-8 m

Leaves – Small, greenish-yellow or pinkish.

ALOVERA GEL

![Alovera gel](image)

Scientific Name - aloebarbadensis miller

Family - Asphodelaceae

Higher Classification – vera

Order – asparagales

Kingdom – plantae
Rank -species

Extraction Method -simple drain method

Part Used- leaves

Height- 24-39 inches/ 60-100cm

Leaves - sculant erect

In Summer - grows indoors year-round

Use- burns

ALMOND OIL (9)

Scientific name – Prunus dulcis

Family - Rosaceae

Higher classification - drupe

Order - Rosales

Kingdom - Plantae

Rank - Species

Extraction Method - Hydraulic press and screw press

Part used - Oil expressed from seed

Height - 2 cm

Leaves - Long with a serrated edge

In summer - Grow alternately on the branch

Use – Anti-Inflammatory
**Table No.1 Formulation for Cream**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>INGREDIENTS</th>
<th>F1 BATCH</th>
<th>F2 BATCH</th>
<th>F3 BATCH</th>
<th>F4 BATCH</th>
<th>ROLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Haritaki</td>
<td>4 gm</td>
<td>3 gm</td>
<td>2.5 gm</td>
<td>2.7 gm</td>
<td>Antioxidant</td>
</tr>
<tr>
<td>2.</td>
<td>Potato starch</td>
<td>1 gm</td>
<td>1.5 gm</td>
<td>2.5 gm</td>
<td>1 gm</td>
<td>Help to lighten dark spots</td>
</tr>
<tr>
<td>3.</td>
<td>Amla powder</td>
<td>0.5 gm</td>
<td>0.5 gm</td>
<td>0.5 gm</td>
<td>0.5 gm</td>
<td>Antioxidant</td>
</tr>
<tr>
<td>4.</td>
<td>Aloevera gel</td>
<td>2 gm</td>
<td>1 gm</td>
<td>1.5 gm</td>
<td>2 gm</td>
<td>Help to regenerate skin cells</td>
</tr>
<tr>
<td>5.</td>
<td>Almond oil</td>
<td>0.8 ml</td>
<td>0.8 ml</td>
<td>0.8 ml</td>
<td>1.6 ml</td>
<td>Help to regenerate skin cells</td>
</tr>
<tr>
<td>6.</td>
<td>Stearic acid</td>
<td>3.6 gm</td>
<td>3.6 gm</td>
<td>3.1 gm</td>
<td>3.6 gm</td>
<td>Emulsifier</td>
</tr>
<tr>
<td>7.</td>
<td>Cetyl alcohol</td>
<td>0.1 gm</td>
<td>0.1 gm</td>
<td>0.1 gm</td>
<td>0.1 gm</td>
<td>Emulsifier, Emollient</td>
</tr>
<tr>
<td>8.</td>
<td>Potassium hydroxide</td>
<td>0.04 gm</td>
<td>0.04 gm</td>
<td>0.04 gm</td>
<td>0.04 gm</td>
<td>Stabilizer</td>
</tr>
<tr>
<td>9.</td>
<td>Sodium hydroxide</td>
<td>0.032 gm</td>
<td>0.032 gm</td>
<td>0.032 gm</td>
<td>0.032 gm</td>
<td>Help to adjust PH</td>
</tr>
<tr>
<td>10.</td>
<td>Triethanolamine</td>
<td>0.24 gm</td>
<td>0.24 gm</td>
<td>0.24 gm</td>
<td>0.24 gm</td>
<td>Help to adjust PH</td>
</tr>
<tr>
<td>11.</td>
<td>Glycerin</td>
<td>2 ml</td>
<td>3.5 ml</td>
<td>3 ml</td>
<td>2 ml</td>
<td>Moisturizing agent</td>
</tr>
<tr>
<td>12.</td>
<td>Methyl paraben</td>
<td>0.002 gm</td>
<td>0.002 gm</td>
<td>0.002 gm</td>
<td>0.002 gm</td>
<td>Preservative</td>
</tr>
<tr>
<td>13.</td>
<td>Propyl paraben</td>
<td>0.004 gm</td>
<td>0.004 gm</td>
<td>0.004 gm</td>
<td>0.004 gm</td>
<td>Preservative</td>
</tr>
<tr>
<td>14.</td>
<td>Rose water</td>
<td>q. s.</td>
<td>q. s.</td>
<td>q. s.</td>
<td>q. s.</td>
<td>Vehicle</td>
</tr>
<tr>
<td>15.</td>
<td>Vitamin E Capsule</td>
<td>1 Capsule</td>
<td>1 Capsule</td>
<td>1 Capsule</td>
<td>1 Capsule</td>
<td>Dark circle remover</td>
</tr>
<tr>
<td>16.</td>
<td>Distilled water</td>
<td>6 ml</td>
<td>5 ml</td>
<td>6 ml</td>
<td>6 ml</td>
<td>Vehicle</td>
</tr>
</tbody>
</table>

- **PROCEDURE**

**Phase A: Oil Phase**

The emulsifying agent stearic acid was dissolved in cetyl alcohol then propyl paraben added and heated at 75 °C. Oil phase was prepared.

**Phase B: Aqueous phase**

To prepare this phase, some water soluble compounds like methyl paraben, Triethanolamine, sodium hydroxide, potassium hydroxide added in water. Then heated at 75°C. Aqueous phase was prepared.

**Phase C: Herbal phase**

Glycerin and Aloevera gel were added in potato starch and Alm powder. Mixed properly after that vitamin E capsule and almond oil were added, then quantity sufficient rose water was added.

After the completion of heating of aqueous phase it was added into the oil phase at same temperature with continuous trituration the smooth and homogenous cream was prepared. After fall in temperature at 45 °C herbal phase were added and triturated.
Evaluation test for poly herbal under eye cream

A. Physical evaluation
Color, odor, texture, and status of the cream were all evaluated in this test.

B. Irritation
On the left-hand dorsal surface, make a (1 cm²) mark. The cream was then administered to the affected area, and the time was recorded. Then, for up to 24 hours, it is evaluated for irritancy and edema, if any, and reported.

C. Wash ability
After applying a tiny amount of cream to the hand, it was washed with tap water.

D. pH
PH was measured using a digital PH meter after 0.5 g cream was spread in 50 ml distilled water.

E. Viscosity
At a temperature of 25 °C, the viscosity of cream was measured using a Brooke field viscometer with spindle No. 63 at 2.5 RPM.

F. Phase Separation
The prepared cream was maintained at a temperature of 25-100 °C, away from light, in a sealed container. Then, over the next 30 days, phase separation was monitored every 24 hours. The phase separation was examined and confirmed for any changes.

G. Spread ability
The spread ability was measured by the time it took two slides to slip away from the cream, which was placed in between the slides, under a specific force. The better the spread ability, the less time it takes to separate the two slides. The cream mixture was then placed on a slide of appropriate size. The formulation was then placed on top of another slide. The cream between the two slides was then pushed uniformly to form a thin layer when a weight or specified load was placed on the upper slide. The weight was then removed, and any excess formulation stuck on the slides was scraped away. The weight was then removed, and any excess formulation stuck on the slides was scraped away. The force of weight attached to the upper slide allowed it to glide off effortlessly. The length of time it took for the upper slide to fall off was recorded.

\[ \text{Spread ability} = \frac{m \times l}{t} \]

Where,
- m= A standard weight attached to or put on top of the upper slide (30g)
- l= The length of a glass slide is denoted by the letter l (5 cm)

RESULTS AND DISCUSSION:

Evaluation results of all the 4 formulations are given below.

A. Physical evaluation
In this test color, odor, texture and state of the four formulations were checked.

B. Irritancy
On the left hand dorsal surface, make a (1 cm²) mark. The cream was then administered to the affected area, and the time was recorded. Then, for up to 24 hours, it is evaluated for irritancy and edema, if any, and reported. According to the findings, none of the four formulations, F1H, F2H, F3H, and F4H, showed signs of irritancy and edema.
Table 2: In this test color, odor, texture and state of the four formulations was checked

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>PARAMETER</th>
<th>F1H</th>
<th>F2H</th>
<th>F3H</th>
<th>F4H</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>color</td>
<td>Yellowish green</td>
<td>Yellowish green</td>
<td>Yellowish green</td>
<td>Yellowish green</td>
</tr>
<tr>
<td>2</td>
<td>Odor</td>
<td>pleasant</td>
<td>pleasant</td>
<td>pleasant</td>
<td>pleasant</td>
</tr>
<tr>
<td>3</td>
<td>Texture</td>
<td>Smooth, slippery, pearlescent</td>
<td>Smooth, slippery, pearlescent</td>
<td>Smooth, slippery, pearlescent</td>
<td>Smooth, slippery, pearlescent</td>
</tr>
<tr>
<td>4</td>
<td>State</td>
<td>semisolid</td>
<td>semisolid</td>
<td>semisolid</td>
<td>semisolid</td>
</tr>
</tbody>
</table>

Table 3: Irritancy study observations

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>FORMULATION</th>
<th>IRRITANT EFFECT</th>
<th>EDEMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F1H</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>F2H</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>F3H</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>F4H</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

C. Wash ability

Applying a little amount of cream to the hand and then washing it with tap water was used to access wash ability. All four formulas were simple to clean.

Table 4: Wash ability observations

<table>
<thead>
<tr>
<th>S. no.</th>
<th>Formulation</th>
<th>wash ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F1H</td>
<td>Easily washable</td>
</tr>
<tr>
<td>2</td>
<td>F2H</td>
<td>Easily washable</td>
</tr>
<tr>
<td>3</td>
<td>F3H</td>
<td>Easily washable</td>
</tr>
<tr>
<td>4</td>
<td>F4H</td>
<td>Easily washable</td>
</tr>
</tbody>
</table>

D. pH

The pH of all the three formulations, F1H, F2H, and F3H, was found to be closer to skin PH, indicating that they can be safely used on skin. The pH of all three formulations, F1H, F2H, and F3H, was found to be closer to skin PH, indicating that they can be safely used on skin.

Table 5: pH observation table

<table>
<thead>
<tr>
<th>S. no.</th>
<th>formulation</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F1H</td>
<td>4.8</td>
</tr>
<tr>
<td>2</td>
<td>F2H</td>
<td>4.7</td>
</tr>
<tr>
<td>3</td>
<td>F3H</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>F4H</td>
<td>5.2</td>
</tr>
</tbody>
</table>
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. The phase separation was examined and confirmed for any changes. According to the findings, no phase exists.

Table 6: Phase separation observation table

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Formulation</th>
<th>Phase separation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F1H</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>F2H</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>F3H</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>F4H</td>
<td>No</td>
</tr>
</tbody>
</table>

F. Viscosity
The viscosity of cream was measured with a Brooke field viscometer at 25 °C and 2.5 RPM using spindle No. 63.

G. Spread ability
The spread ability of the four formulations, F1H, F2H, F3H, and F4H, was tested, and it was discovered that for F3H, 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 F3H exhibited greater spread ability.

Table no.7: Spread ability observation table

<table>
<thead>
<tr>
<th>SR. NO.</th>
<th>FORMULATION</th>
<th>TIME (SEC)</th>
<th>SPREAD ABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F1H</td>
<td>10</td>
<td>22.8</td>
</tr>
<tr>
<td>2</td>
<td>F2H</td>
<td>10</td>
<td>22.8</td>
</tr>
<tr>
<td>3</td>
<td>F3H</td>
<td>7</td>
<td>32.4</td>
</tr>
<tr>
<td>4</td>
<td>F4H</td>
<td>15</td>
<td>15.18</td>
</tr>
</tbody>
</table>

Table no.8 EVALUATION OF HERBAL EYE CREAM

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>NAME OF THE TEST</th>
<th>SPECIFICATION</th>
<th>OBSERVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Color</td>
<td>Yellowish green</td>
<td>Yellowish green</td>
</tr>
<tr>
<td>2</td>
<td>Odor</td>
<td>Pleasant</td>
<td>Pleasant</td>
</tr>
<tr>
<td>3</td>
<td>Texture</td>
<td>Smooth, Slippery, Pearlescent</td>
<td>Smooth, Slippery, Pearlescent, scrubby</td>
</tr>
<tr>
<td>4</td>
<td>Aesthetic appeal</td>
<td>Excellent/Good/ Satisfactory</td>
<td>Excellent</td>
</tr>
<tr>
<td>5</td>
<td>Cohesiveness</td>
<td>High/Moderate/Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>6</td>
<td>Firmness</td>
<td>High/Moderate/Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>7</td>
<td>Rub outs</td>
<td>Average 7-8 rubout</td>
<td>Average 5 rub outs</td>
</tr>
<tr>
<td>8</td>
<td>Spread ability</td>
<td>Complete/Moderate/Low</td>
<td>Complete</td>
</tr>
<tr>
<td>9</td>
<td>Residue left</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>10</td>
<td>PH</td>
<td>4-7</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>Flow</td>
<td>Highly viscous</td>
<td>Slightly viscous</td>
</tr>
<tr>
<td>12</td>
<td>Phase separation</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>Precipitation of ingredient</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Conclusion:

The above data research has been carried out with the aim of developing formulation containing traditional substance and studying their effectiveness in removal of the eye contours by in-vitro techniques. The present study involves formulation development and evaluation of under eye cream, the present work mainly focuses on potential of extract from cosmetic purpose. It helps to reduce dark circle from under eye area further studies can be conducted for more accurate result like anti-tyrosine’s, anti-wrinkle.

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