



FORMULATION AND EVALUATION OF POLY HERBAL UNDER EYE AND SKIN CREAM

¹Mr. Yashkumar A. Meshram, ²Mr. Mukesh M. Nikhade, ³Mr. Vansh S. Bopche,

⁴Mr. Yash G. Ade, ⁵Miss. Pranali M. Chaudhari, ⁶Mr. Prashant D. Rathod,

¹M. Pharmacy (Pharmaceutics), ²M. Pharmacy (Pharmacology), ³B. Pharmacy,

⁴B. Pharmacy, ⁵B. Pharmacy, ⁶B. Pharmacy

Jagadambha Institute Of Pharmacy And Research, Kalam

Maharashtra, India.

ABSTRACT:

To formulate and evaluate poly herbal cream using aloe vera gel, Haritaki powder, Sandalwood powder and Amla powder, Neem powder, were used. The cream was prepared by using the cream base that is stearic acid, cetyl alcohol, Sandalwood powder, methyl paraben, distilled water, rose oil, aloe vera gel, Haritaki powder 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 six batches of our herbal cream were prepared namely Y1H, Y2H, Y3H, Y4H, Y5H and Y6H. All six batches were evaluated for different parameters like appearance, pH and viscosity. All the six formulations Y1H, Y2H, Y3H, Y4H, Y5H and Y6H showed good appearance, pH, adequate viscosity and no phase separation was observed. Also, the formulations Y1H, Y2H, Y3H, Y4H, Y5H and Y6H showed no redness and irritation during irritancy study and they were easily washable. All the six formulations Y1H, Y2H, Y3H, Y4H, Y5H and Y6H were stable at room temperature. We used herbal ingredients shows significant various activities. Based on the results, we can suggest that all the six formulations Y1H, Y2H, Y3H, Y4H, Y5H and Y6H were stable and can be safely used on the skin.

Keywords: Poly herbal under eye and skin cream, Aloe Vera, Haritaki, Sandalwood Powder, Amla Powder, Olive Oil.

INTRODUCTION:

As we navigate our daily lives, exposure to pollution, UV rays, and stress can cause visible damage to our skin. Due to these external factors, the delicate skin around our eyes can become puffy and dark, while acne can leave scars and blemishes on our faces. That's where a poly herbal cream can come in handy. Poly herbal under eye cream and acne cream are formulated with natural extracts and ingredients to soothe and nourish your skin. They provide a gentle and effective solution to reduce puffiness, dark circles, and acne marks. These creams contain antioxidants

and vitamin E, which helps in repairing and moisturizing the skin. Regular usage of these creams can help rejuvenate and improve the overall appearance of the under-eye and facial skin. Cosmetic products are used to protect skin against exogenous and endogenous harmful agents and enhance the beauty and attractiveness of skin. The use of cosmetics not only developing an attractive external appearance, but towards achieving longevity of good health by reducing skin disorders. The synthetic or natural ingredients present in skin care formulation that supports the health, texture and integrity of skin, moisturizing, maintaining elasticity of skin by reduction of type I collagen and photo protection etc. This property of cosmetic is due to presence of ingredients in skin care formulation, because it helps to reduce the production of free radicals in skin and manage the skin properties for long time. The cosmetic products are the best choice to reduce skin disorders such as hyper pigmentation, skin aging, skin wrinkling and rough skin texture etc. The demand of herbal cosmetic is rapidly expanding. This expansion is due to the availability of new ingredients, the financial rewards for developing successful products, consumer demand, and a better understanding of skin physiology. The plant parts used in cosmetic preparation should have varieties of properties like antioxidant, anti-inflammatory, antiseptic, emollient, antikerolytic activity and antibacterial etc. Herbal products claim to have less side effects, commonly seen with products containing synthetic agents. The market research shows upward trend in the herbal trade with the herbal cosmetic industry playing a major role in fuelling this worldwide demand for herbals.

Poly herbal under eye cream and skin cream are two types of skincare products formulated with a blend of natural and herbal ingredients. These creams can be used to effectively address specific skin concerns and provide nourishment to the delicate skin around the eyes and the acne-prone areas of the face. Poly herbal under eye cream is specifically designed to target dark circles, puffiness, and fine lines around the eyes. The cream contains a blend of natural ingredients such as aloe-Vera, rose water, olive oil, and vitamin E that work together to soothe and hydrate the skin while reducing the appearance of under-eye bags and wrinkles. Skin cream, on the other hand, is formulated with a blend of herbal ingredients such as neem, haritaki, sandalwood powder, and aloe-vera that work together to combat acne-causing bacteria, reduce inflammation, and prevent future breakouts. These creams also contain natural moisturizers that prevent skin dryness and irritation. Overall, poly herbal under-eye cream and skin cream are excellent natural skincare products that can effectively treat specific skin concerns while supporting healthy, radiant skin.

Formulation and evaluation of poly herbal under eye cream and skin cream involve the selection of suitable natural ingredients and their combinations, followed by a series of tests and analyses to ensure the safety, stability, and effectiveness of the final product. The formulation of these creams involves the preparation of herbal powder, oils and the blending of these ingredients to create a smooth and homogeneous cream base. Various factors such as the pH, viscosity, and emulsion stability are monitored throughout the formulation process to ensure that the final product meets the desired specifications. The evaluation of poly herbal under eye and skin cream involves a series of tests to determine their safety and effectiveness. These tests include physical, chemical, and microbiological analyses to evaluate the cream's appearance, texture, thermal stability, pH, microbial load, and the presence of any contaminants. Skin compatibility tests are also performed to evaluate the creams' safety and compatibility with different skin types. These tests involve the application of the cream on healthy skin or skin with specific conditions to observe any sensitivity, irritation, or allergic reactions. Overall, the formulation and evaluation of poly herbal

under eye cream and skin cream require rigorous quality control measures to produce safe and effective products that deliver the intended benefits to the users. ^(1,2,3)

Creams are semisolid dosage forms containing more than 20% water or volatile components and typically less than 50% hydrocarbons, waxes, or polyols as vehicles ⁽⁴⁾

Cream is classified into -

- 1) Oil in water – Which are composed of small droplets of oil dispersed in continuous water phase,
- 2) Water in Oil – Which are composed of small droplets of water dispersed in a continuous oily phase.

All causes of dark circles under the eyes includes⁽⁵⁾

- 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.

Advantages of Herbal cream: ⁽⁶⁾

- 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 nourishment all types of skin.

Disadvantage of synthetic cream: ⁽⁷⁾

- Synthetic cream may lead 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.

The main aim of our work is to develop an 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.
- **Chandan powder** - Reduce skin diseases like dry skin, wrinkles, rashes etc. and also glow and bright to the face.
- **Amla powder** - It is used as glowing skin, it gives vitamin c and it is also used to reduce pigmentation, redness and itching of the skin
- **Aloe vera gel** - Moisturizer, reduce acne and skin irritation.
- **Olive oil** - Moisturizes and fights bacteria
 - 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 Ayurveda.
 - If you're prone to under eye and skin problem, using a soap made with olive oil may help decrease your under eye and skin problem by killing off the bacteria that causes the acne. Olive oil is also known to moisturize and hydrate your skin.

Plant Profile

Haritaki⁽⁸⁾

- **Scientific Name**-Terminalia chebula
- **Family** - Combretacea
- **Order** - Myrates
- **Kingdom** - Plantae
- **Rank** - Species
- **Part Used** - fruit
- **Height** - 15-25 m
- **Leaves** - leathery, oval leaves have a downy
- **In summer** - White flower
- **Uses** – Antioxidant



Fig. No. 1

Sandalwood Powder⁽⁹⁾

- **Scientific name** - Santalum album
- **Family** - Santalaceae
- **Order** - Santalales
- **Kingdom** - Plantae
- **Parts used** - Wood and roots
- **Height** - 10m
- **Uses** – Anti-tanning and Anti-ageing



Fig. No. 2

Amla powder (10,11)

- **Scientific Name** - Phyllanthusemblica
- **Family** - Phyllanthaceae
- **Order** - Malpighiales
- **Kingdom** - Plant
- **Extraction Method** - Dry extraction method
- **Part Used** - Fruit
- **Height** - 1-8 m
- **Leaves** - Small, greenish-yellow or pinkish.
- **Uses** – Antibacterial and Anti-inflammatory



Fig. No. 3

Aloevera Gel ⁽¹²⁾

- **Scientific Name** - Aloebarbadensis miller
- **Family** - Asphodelaceae
- **Order** - asparagales
- **Kingdom** - plantae
- **Rank** - species
- **Extraction Method** - simple drain method
- **Part Used** - leaves
- **Height** - 24-39 inches/ 60-100cm
- **Leaves** - sculant erect
- **Use** - Healing and softening of skin



Fig. No. 4

Olive Oil ⁽¹³⁾

- **Scientific Name** - Olea europaea L.
- **Family** - Oleaceae
- **Order**- lamiales
- **Kingdom** - plantae
- **Extraction method** - crushing, malaxation, and centrifugation
- **Parts used** - Epicarp (the outer covering), Mesocarp (the pulp), and Endocarp (the pit).
- **Uses** - For heart disease, diabetes, and high blood pressure



Fig. No. 5

Neem Powder (14)

- **Scientific Name** - Azadirachta Indica.
- **Family** - Meliaceae.
- **Order** - Sapindales
- **Kingdom** - Plantae
- **Geographical Source** - It Is Found in India, Pakistan, Bangladesh, Sri Lanka, Thailand, Malaysia,
- **Macroscopic Characters - Leaves:** - Alternate, exstipulate, Imparipinnate Leaflets 5.010 cm in length
- **Parts Used**- leaves
- **Uses** - Anti-detrification, relif skin dryness, antioxidant



Fig. No. 6

Different formulation of poly herbal under eye and skin cream: -

Sr. No.	Ingredients	Y1H Batch	Y2H Batch	Y3H Batch	Y4H Batch	Y5H Batch	Y6H Batch
1	Haritaki	3 gm	2.5 gm	2.7 gm	0.75 gm	1 gm	1.25 gm
2	Sandalwood powder	1.5 gm	2.5 gm	1 gm	0.75 gm	1 gm	1.25 gm
3	Amla Powder	0.5 gm	0.5 gm	0.5 gm	0.325 gm	0.5 gm	0.625gm
4	Alovera Gel	1 gm	1.5 gm	2 gm	3 gm	4 gm	5 gm
5	Olive Oil	0.8 ml	0.8 ml	1.6 ml	0.75 ml	1 ml	1.25 ml
6	Neem Powder	0.5 gm	0.5 gm	1 gm	0.3 gm	0.5 gm	0.625 gm
7	Stearic Acid	3.6 gm	3.1 gm	3.6 gm	2.7 gm	3.6 gm	4.5 gm
8	Cetyl Alcohol	0.1 gm	0.1gm	0.1 gm	0.075 gm	0.1 gm	1.25 gm
9	Potassium Hydroxide	0.04 gm	0.04 gm	0.04 gm	0.03 gm	0.04 gm	0.05 gm
10	Sodium Hydroxide	0.032 gm	0.032 gm	0.032 gm	0.28 gm	0.32 gm	0.36 gm
11	Triethanolamine	0.24 gm	0.24 gm	0.24 gm	0.18 gm	0.24 gm	0.30 gm
12	Glycerin	3.5 ml	3 ml	2 ml	3ml	4 ml	5 ml
13	Methyl Paraben	0.002 gm	0.002 gm	0.002 gm	0.002 gm	0.002 gm	0.002 gm
14	Propyl Paraben	0.004 gm	0.004 gm	0.004 gm	0.004 gm	0.004 gm	0.004 gm
15	Rose Water	q. s.	q. s.	q. s.	q. s.	q. s.	q. s.
16	Vitamin E Capsule	1 Capsule	1 Capsule	1 Capsule	1 Capsule	1 Capsule	1 Capsule
17	Distilled water	5 ml	6 ml	6 ml	6 ml	8 ml	10 ml

Table No. 1 Formulation for Cream

Sr. No.	Ingredients	Y1H Batch	Y2H Batch	Y3H Batch	Y4H Batch	Y5H Batch	Y6H Batch
1	Haritaki	14.83%	11.78%	12.7%	4.04%	4.02%	4.06%
2	Sandalwood powder	7.14%	11.78%	4.71%	4.04%	4.02%	4.06%
3	Amla Powder	2.47%	2.35%	2.3%	1.75%	2.01%	2.03%
4	Alovera Gel	4.84%	7.06%	9.4%	16.17%	16.11%	16.26%
5	Olive Oil	3.95%	3.77%	7.54%	4.04%	4.02%	4.06%
6	Neem Powder	2.47%	2.35%	4.71%	1.6%	2.01%	2.03%
7	Stearic Acid	17.80%	16.96%	16.97%	14.47%	14.50%	14.6%
8	Cetyl Alcohol	0.49%	0.47%	0.47%	0.404%	0.40%	0.406%
9	Potassium Hydroxide	0.19%	0.19%	0.18%	0.161%	0.161%	0.162%
10	Sodium Hydroxide	0.15%	0.15%	0.15%	1.50%	1.28%	1.17%
11	Triethanolamine	1.18%	1.18%	1.13%	0.970%	0.96%	0.975%
12	Glycerin	17.31%	14.13%	9.42%	16.17%	16.11%	16.26%
13	Methyl Paraben	0.0098%	0.0098%	0.009%	0.010%	0.0080%	0.006%
14	Propyl Paraben	0.019%	0.0197%	0.018%	0.021%	0.016%	0.013%
15	Rose Water	q.s	q.s	q.s	q.s	q.s	q.s
16	Vitamin E Capsule	1.97%	1.97%	1.88%	2.15%	1.61%	1.30%
17	Distilled water	24.73%	28.27%	28.28%	32.35%	32.22%	32.52%

Table No. 2 Formulation for Cream in



Fig. No. 7 percentage

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 Aloe Vera gel were added in Haritaki powder, sandalwood powder, Alma powder and Neem powder. Mixed properly after that vitamin E capsule and Olive 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 was added and triturated.

Evaluation test for poly herbal under eye cream:**A. Physical evaluation** ⁽¹⁵⁾

Colour, odour, texture, and status of the cream were all evaluated in this test.

B. Irritation ⁽¹⁶⁾

On the left-hand dorsal surface, make a (1cm -2cm) 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 ⁽¹⁶⁾

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

D. pH (17, 18)

PH was measured using a digital PH meter after 0.5 g cream was mixed with 50 ml distilled water.



Fig.No 8. Digital pH Meter

E. Viscosity ⁽¹⁶⁾

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



Fig no.9 Brookfield viscometer

F. Phase Separation ⁽¹⁶⁾

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 ⁽¹⁶⁾

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. Two sets of standardized glass slides were taken. 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 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.

$$\text{Spread ability} = m \times l/t$$

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

RESULTS:

Evaluation results of all the 6 formulations are gives below.

A. Physical evaluation

Sr. No	Parameter	Y1H	Y2H	Y3H	Y4H	Y5H	Y6H
1	Colour	Pale Brown	Slightly Greenish	Pale Brown	Dark Brown	Pale Brown	Brown
2	Odour	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant
3	Texture	Uneven, slippery, Pearlescent	Uneven, Dry, Pearlescent	Smooth, slippery, Pearlescent	Uneven, slippery, Pearlescent	Smooth, slippery, Pearlescent	Smooth, slippery, Pearlescent
4	State	Semisolid	Semisolid	Semisolid	Semisolid	Semisolid	Semisolid

In this test colour, odour, texture and state of the six formulations were checked.

Table 1: In this test colour, odour, texture and state of the six formulations was checked

B. Irritancy

On the left-hand dorsal surface, make a (1 cm) 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 six formulations, Y1H, Y2H, Y3H, and Y4H, Y5H and Y6H showed signs of irritancy and edema.

Sr. No.	Formulation	Irritant Effect	Edema
1	Y1H	No	No
2	Y2H	No	No
3	Y3H	No	No
4	Y4H	No	No
5	Y5H	No	No
6	Y6H	No	No

Table 3: Irritancy study observations

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 Six formulas were simple to clean.

Sr.No.	Formulation	Wash Ability
1	Y1H	Easily washable
2	Y2H	Easily Washable
3	Y3H	Easily washable
4	Y4H	Easily washable
5	Y5H	Easily washable
6	Y6H	Easily washable

Table 4: Wash ability observations

D. pH

The PH of all the six formulations, Y1H, Y2H, Y3H, Y4H, Y5H and Y6H was found to be closer to skin pH, indicating that they can be safely used on skin.

Sr.No.	Formulation	pH
1	Y1H	4.8
2	Y2H	4.7
3	Y3H	5.5
4	Y4H	5.2
5	Y5H	5
6	Y6H	5.8

Table 5: pH observation 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.

Sr.No.	Formulation	Phase separation
1	Y1H	No
2	Y2H	No
3	Y3H	No
4	Y4H	No
5	Y5H	No
6	Y6H	No

Table 6: Phase separation Observation 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 Six formulations, Y1H, Y2H, Y3H, Y4H, Y5H and Y6H was tested, and it was discovered that for Y5H, 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 Y5H exhibited greater spread ability.

Sr.No.	Formulation	Time (sec)	Spread Ability
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1	Y1H	10	22.8
2	Y2H	10	22.8
3	Y3H	8	30.4
4	Y4H	15	15.18
5	Y5H	7	32.4
6	Y6H	12	20.8

Table no.7: Spread ability observation table

DISCUSSION: -

From above results we had performed various evaluation test such as physical test, irritancy test, wash ability, pH, phase separation, viscosity, spread ability, and concluded that the all batches formulation was different from each other. All batches for physical test was performed and observed that the color of Y1H, Y3H and Y5H batch is pale brown, Y2H batch is slightly greenish, Y4H batch is dark brown and Y6H batch is brown. The odour of all batches are pleasant. Y5H batch was the smooth, slippery and pearlescent texture when compare to other batches and the state of all batches are semisolid. All batches are free from irritancy, edma and easily washable on tested for washability test. The pH test was performed and concluded that Y1H batch having 4.8, Y2H batch having 4.7, Y3H batch having 5.5, Y4H batch having 5.2, Y5H batch having 5 which is best for skin and Y6H batch having 5.8 pH. The phase separation was examined and found for no phase separation for all batches. The viscosity was measured by Brooke field viscometer and shown sufficiently viscous. Y5H batch was shown superior spread ability test when compare to the other batches.

From above result it is concluded that Y5H batch passes all the evaluation test and shows better stability as compare to the other batches.

CONCLUSIONS: -

From the obtained results it is concluded that the formulated cream showed good consistency and spread ability, homogeneity, pH, non-greasy and there is no phase separation during study period of research. By using haritaki powder, sandalwood powder, amla powder, aloe vera gel, neem powder and the cream showed multipurpose effect and all herbal ingredients were used showed different significant activities. Based on the results we can say that all formulation, Y1H, Y2H, Y3H, Y4H, Y5H and Y6H were stable at room temperature and can be a safely used on the skin. Among the various formulated batches Y5H batch of formulation was found to be optimized batch from formulation and evaluation point of view. The present work focuses on the potential of herbal extract from cosmetic purpose. The uses of cosmetic have been increased in many folds in personal care system. The uses bioactive ingredient in cosmetic influence biological functions of skin and provide nutrients necessary for the healthy skin. The prepared herbal cream has best properties and having nutritional values using less chemical which overcome the various skin problem. Since the cream was prepared by using simple ingredients and simple method so the cream is also economical.



Final (Y5H) Batch

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