Formulation and Evaluation of Herbal Eye Cream

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Abstract: **Herbal cosmetics are the preparations are used to beautify and enhance the human appearances. For cosmetic purposes, pharmaceutical creams have a variety of applications such as cleansing, beautifying, altering appearance, moisturizing etc. to skin protection against bacterial, fungal infections as well as healing cuts, burns, wounds on the skin. Tea powder, aloe Vera gel were used to make and assess the herbal eye cream. Stearic acid, cetyl alcohol, methyl paraben, distilled water, rose oil, were used to make the cream base. The herbal extract and all of the excipients were combined uniformly to create the cream. Three batches (F1, F2, F3) of our herbal cream were made using the homogenous (conventional) mixing technique. The formulated cream showed good consistency and spread ability, homogeneity, pH, non-greasy, no evidence of phase separation during study period of research. Stability parameters like visual appearance, nature, viscosity and fragrance of the formulated cream showed that there was no significant variation during the study period of research. The herbal extract containing moisturizing cream gives the cooling and soothing effect due to slow evaporation of water present in the emulsion**

***Index Terms*— Cream, skin, puffing, dark circle, herbal, hyperpigmentation, anti-tanning**

I. INTRODUCTION

Cosmetics are the products which are generally used to beautify the skin and also to purify the skin, the cosmetics are the word derived from Greek word – ‘kosmesticos’ which means to adorn. From that time the materials which are used to promoting appearances or to beautify the skin are called as cosmetics. From the ancient time till now people are still using poly herbal or herbal cosmetics for the beautification of Skin.

Ayurveda says that blood impurities are typically the cause of skin issues. Skin-related disorders are brought on by blood toxins that have accumulated as a result of poor diet and lifestyle choices. The ancient science of cosmetology is believed to have originated in Egypt and India, but the earliest records of cosmetic substances and their application dates back to Circa 2500 and 1550 B.C, to the Indus valley civilization. The word cosmetics defined as “Substances of diverse origin, scientifically compounded and used to i) cleanse, ii) allay skin troubles, iii) cover up imperfections and iv) beautify” (Encyclopedia Britannica, 1970), is used in this paper in a wider sense to include Oral hygiene as well over time, cosmetics expanded beyond adornment to include items like high-heeled shoes and artificial dentures.

It is a common goal of humans to want to seem attractive, young, and lovely. Compared to elsewhere in the skin, the skin is thinner and has a decreased amount of fat in the area around the eyes.so the earliest signs of aging are puffiness / bags / pigmentation under the eye’s dark circles Stress, illness, environmental pollution, deposition of melanin, lifestyle and genetics. One of the most common facial appearance problems for all ages is dark circles. Blood that flows through the large veins under the skin below the eye becomes a blue color as a result of the very thin skin there. Dark circles get darker when the skin around the eyes dries out too much. Per orbital hyperpigmentation is when more melanin than there is in the eye usual is produced around the eyes, giving them a darker hue under the eyelids or around the eyes Dark circles are common among all humans of all ages. They are sometimes also referred to as a circular (not round) darkening of the skin under the eyes or on the face.in both eyes. Dark circles can be caused by any number of extrinsic as well as intracellular mechanisms, such as sex, age, anatomical variations, atopic dermatitis, dryness, heredity, and other physical issue, excessive pigmentation, tear troughs, shadowing from wrinkles and infra orbital laxity, thin, translucent skin above the orbicularis oculi muscle, shadowing from an infra-orbital fat Herniation and vein running are all clinical factors responsible for the dark circles.

The skin around the eyes is one of the most delicate and sensitive areas of the face, prone to signs of aging, fatigue, and environmental stress. Factors such as UV exposure, pollution, and lifestyle habits can lead to the formation of fine lines, wrinkles, dark

circles, and puffiness, making the eyes appear tired and aged. Eye creams have become an essential part of skincare routines, designed to address these specific concerns and provide targeted care to the delicate skin around the eyes.

The formulation of an effective eye cream requires a deep understanding of the skin's structure and function, as well as the specific needs of the eye area. Active ingredients such as peptides, vitamins, and antioxidants can help to reduce the appearance of fine lines and wrinkles, improve skin elasticity, and protect against environmental stressors. However, the selection and combination of these ingredients must be carefully considered to ensure optimal efficacy and safety.

This study aims to formulate and evaluate an eye cream that combines a blend of active ingredients to address common concerns such as dark circles, puffiness, fine lines, and dryness. The formulation will be designed to be gentle, non-irritating, and suitable for daily use. The efficacy and safety of the eye cream will be assessed through a series of in vitro and in vivo tests, including stability testing, skin irritation testing, and clinical efficacy testing.

The results of this study will provide valuable insights into the formulation and evaluation of eye creams, and will contribute to the development of effective and safe products for consumers. Furthermore, this research will highlight the importance of careful ingredient selection, formulation design, and testing in the development of skincare products.

Main causes of dark circles.

* Anemia resulting from low iron levels.
* Excessive sun exposure.
* Rubbing of the eyes frequently.
* Disorder of the thyroid.
* Dermatitis, inherited genetics.
* Dehumidification.
* Glaucoma treatment with eye drops.

Various type of herb and medicine are used for reduce a dark circle in which the eye cream has best option for best facial appearance. Eye cream is a specialized skincare product designed to target the delicate skin around the eyes. It's formulated to address concerns like fine lines, wrinkles, puffiness, and dark circles, providing hydration and nourishment to this specific area. Cream is a sort of semisolid emulsion that is meant to be applied externally. It comes in two varieties: water in oil (w/o) and oil in water (o/w). It is administered to the skin's outermost or most superficial layers. The purposes of the cream are to provide soothing effects to the skin and shield it from various environmental conditions. Many creams are available, including foundation, disappearing, night, cleansing, and cold. Our primary goal is to create herbal cream that has multiple uses, such as reducing dark circles, irritation, aches, and skin diseases.

Fig No-1 Dark Circles

Advantages of herbal cream:

* It aids in the reduction of dark circles.
* It promotes skin that glows.
* The components in herbal cream are organic and pure.
* It serves to nourish all types of skin.
*They don't cause skin irritation or negative consequences.
* It’s helps to skin glow.
* Herbal cream has pure and organic ingredients

Disadvantage of synthetic cream:

* 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.

AIM AND OBJECTIVE

The aim of eye cream is to reduce the appearance of fine lines, wrinkles, dark circles, and puffiness around the delicate eye area, promoting a smoother, brighter, and more youthful appearance.

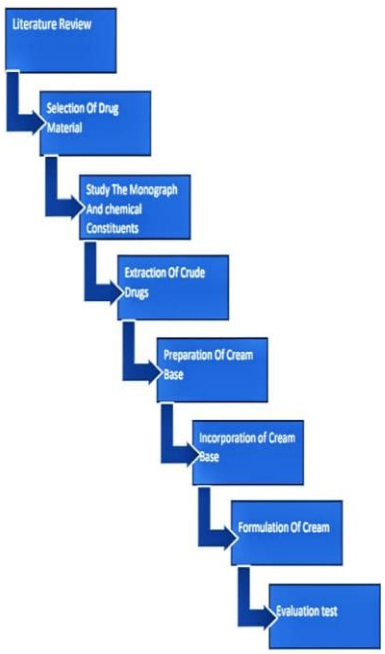
Objectives of Eye Cream:

1. Reduce fine lines and wrinkles: Minimize the appearance of aging skin.

2. Diminish dark circles: Lessen the visibility of discoloration under the eyes.
3. Decrease puffiness: Reduce swelling and inflammation.
4. Hydrate and moisturize: Provide long-lasting hydration to the delicate skin around the eyes.
5. Improve skin elasticity: Enhance skin firmness and tone.
6. Fade age spots and hyperpigmentation: Reduce the appearance of uneven skin tone.
7. Soothe and calm: Provide relief from irritation, redness, and itchiness.
8. Protect from environmental stressors: Shield the skin from pollution, UV radiation, and other external factors.

Functions of Eye Cream:
1. Moisturizing: Hydrates the delicate skin around the eyes.
2. Anti-aging: Reduces fine lines, wrinkles, and age spots.
3. Brightening: Fades dark circles and discoloration.
4. Depuffing: Reduces swelling and inflammation.
5. Soothing: Calms and comforts irritated skin.
6. Protecting: Shields the skin from environmental stressors, such as UV radiation and pollution.
7. Firming: Improves skin elasticity and tone.
8. Nourishing: Provides essential nutrients and antioxidants to the skin.

PLAN OF WORK



MATERIAL

Plant Material
Tea extract, Aloe Vera, was taken as plant material in this formulation.
Aloe Vera was collected from the Botanical Garden, Sayali College of Pharmacy, chh.Sambhajinagar., Rose Water, Vitamin E Capsule Aloe Vera, was purchased from the local market of chh.Sambhajinagar

1)TEA

Synonym
Tea leaf, tea plant
Biological source –
Tea leaves are obtained from the plant Camellia sinensis.
Description –
Colour- Dark brown, green
Odor-Aroma.
Taste-Bitter
Chemical Constituents Caffeine, Gallic acid, Caffeine, the bromine, theophylline
Therapeutic uses
1. Antioxidant Properties: Protect against cell damage and oxidative stress.
2. Anti-Inflammatory Effects: May help reduce inflammation and improve overall health.
3. Cardiovascular Health: May help lower cholesterol levels and improve heart health.
4. Cancer Prevention: Some studies suggest tea may help reduce risk of certain cancers.
5. Digestive Health: Certain teas, like peppermint and ginger, may help soothe digestive issues.
6. Stress Relief: Herbal teas like chamomile and lavender may promote relaxation and reduce stress.

Fig No.2 -Tea powder

2) ALOE-VERA

Synonym-
Aloe Vera, burn plant
Biological source –

Dried latex of leaves of it also known as cape aloe.
Family- Liliaceae
Description –
Color- clear to slightly yellow / translucent gold
Odor-similar like rotten garlic or onion.
Taste- Bitter
Chemical constituents – aloe-emodin, vitamins, Enzymes, Minerals, Sugars, Salicylic
Therapeutic uses
1. Soothing and calming: Aloe Vera gel's anti-inflammatory properties help reduce redness, irritation, and swelling.
2. Hydrating: Aloe Vera gel's high water content helps to moisturize and hydrate the skin.
3. wound healing: Aloe Vera gel's growth factors and vitamins promote wound healing and tissue repair.
4. Antibacterial and antifungal: Aloe Vera gel's antimicrobial properties help prevent infections.
5. Anti-aging: Aloe Vera gel's antioxidants help reduce fine lines, wrinkles, and age spots.
6. Burns: Aloe Vera gel helps soothe and heal burns.
7. Skin irritations: Aloe Vera gel calms and reduces inflammation caused by skin irritations.
8. Acne: Aloe Vera gel's antibacterial properties help reduce acne severity.
9. Eczema and psoriasis: Aloe Vera gel's anti-inflammatory properties help soothe and calm affected skin.

Fig No.3 -Aloe-Vera

3) ROSE WATER:
Synonyms:
Rosa water, floral water
Biological source –
Rose water is primarily derived from the petals of the Rosa rubiginosa
Family: Roseaceae
Description –
Color- light pinky- blush
Odor- rose's odor, fresh, sweet
Taste- slightly sweet and floral
Chemical Constituents Phenyl ethanol, Geraniol and Citronellol, Linalool, Phenyl ethyl alcohol.
Therapeutic uses
1. Soothing and calming: Rose water's anti-inflammatory properties help reduce redness and irritation, making it ideal for sensitive skin or conditions like eczema and rosacea.
2. Antibacterial: Rose water's antibacterial properties help combat acne-causing bacteria, preventing breakouts and supporting the healing process of existing ones.
3. Antioxidant: Rich in antioxidants like vitamin C, rose water protects the skin from damage caused by free radicals, promoting a youthful and glowing complexion.
4. Moisturizing: Rose water's natural oils help lock in moisture, keeping the skin smooth and hydrated.
5. Toning: As a natural astringent, rose water helps tighten pores and restore the skin's natural pH balance.
6. Anti-aging: Rose water's antioxidants and vitamins A and C help reduce fine lines, wrinkles, and age spots, promoting a more even skin tone.

Fig No.4 -Rose water

PREPARATION OF EXTRACTION:

Step 1: Formulation of tea extract
Weigh 20gm of tea and dilute it in 80ml of rosewater.

Then cooked on a hot plate at 75°C.

Filter the tea extract using filter paper.

Now, the tea extract is stored in a beaker.

Step 2: Preparation of Aloe-Vera gel:
Firstly, we will clean the aloe Vera leaves.

Then we cut those leaves with a knife and take out its pulp.

Then we grind the pulp with help of grinder.

We careful not to include any pieces of aloe-Vera skin and then take out aloe-Vera gel in Petri-dish.

Aloe-Vera gel helps to prevent form drying a skin. Aloe gel is used in topical preparations and cosmetics. It Posses good Moisturizing property, anti-inflammatory property, anti-wrinkle property, protective assist in blood sugar regulation also provide hydration, support weight management antioxidant property. Fresh gel has a role in burns and wounds Fresh gel has a role in burns and wounds

Fig No. 6 - Aloe-vera gel

FORMULATION OF HERBAL UNDER EYE DARK CIRCLES CREAM
Several elements and their formulas roles in the manufacturing of herbal under eye creams are listed below in the table:

Sr.no	Ingredient	F1	F2	F3	Role
1	Tea powder	1.25 gm	1.25 gm	1.12 gm	Reduce fine lines and wrinkles
2	Aleo vera gel / vit E capsule	1.25 ml	1.05 ml	1.25 ml	Antioxidant/Moisturizing agent
3	Rose water	0.5 ml	0.5 ml	0.75 ml	Cooling sensation
4	Almond oil	0.25ml	1 ml	0.5 ml	Humectant
5	Glycerine	3.75 ml	3.62 ml	3.75 ml	Moisturizing agent
6	Methyl paraben	0.25 ml	0.25 ml	0.25 ml	preservative
7	Sod. Hydroxide	q.s	q.s	q.s	Maintain PH
8	Steric acid	1 gm	1 gm	1 gm	emulsifier
9	Water	15 ml	14 ml	15 ml	Mixing agent
10	Cetyl alcohol	1 gm	1 gm	1 gm	Thickening agent

Chemicals: Tea powder, aloe Vera, rose water, almond oil, glycerin, methyl paraben, sodium hydroxide, water, cetyl alcohol.
Apparatus: Mortar pestle, beaker, weighing balance, stirrer, water bath, pipette, measuring cylinder, burner, spatula, etc.

PROCEDURE:
Phase A: The oil phase Cetyl alcohol was used to dissolve the emulsifying ingredient, stearic acid, and then methyl paraben was added and Triturate, The oil phase was ready.
Phase B: The water phase this phase is generated by adding water to certain water-soluble compounds, such as sodium hydroxide and methyl paraben. After that Triturate it. The water phase was ready.
Phase C: The phase of herbs tea powder, glycerin were added to the aloe Vera gel. After thoroughly mixing, almond oil and vitamin E capsules were added, followed by an adequate amount of rose water.
The smooth and uniform cream was created by adding the heated aqueous phase to the oil phase at a constant temperature and stirring. Herbal phase was introduced and triturated following a drop in specific environment.

Fig No. 8 - Preparation of eye cream

EVLUATION PARAMETER OF HERBAL UNDER EYE CREAM

Physical evaluation:

Physical characteristics like color, appearance, and consistency were evaluated during the formulation process.

Sr. No	Parameter	Formulation
1	Colour	Creamy
2	Door	Sweet
3	Texture	Smooth
4	State	Semi – solid
5	Skin irritation	No irritant
6	Phase separation	No separation

Determination of pH:

Prepare the pH meter: Turn on the pH meter and allow it to warm up. Calibrate the pH meter: Use pH calibration buffers to calibrate the pH meter according to the manufacturer's instructions.

Verify calibration: Check the pH meter's accuracy using a known pH buffer.

Wash ability Test:

Apply the product: Apply a standard amount of the product to a test surface (e.g., skin or a synthetic surface).

Allow to dry: Let the product dry or set for a specified time. Wash with water: Wash the surface with water, using a standardized washing procedure

Evaluate residue: Assess the amount of residue left after washing.

Irritancy study:

Application of test substance: Apply a small amount of the test substance (e.g., eye cream) to a discrete area of skin (e.g., behind the ear or on the forearm)

Control application: Apply a control substance (e.g., distilled water) to an adjacent area.

Occlusive dressing: Cover the test and control areas with an occlusive dressing.

Exposure period: Leave the dressing in place for a specified period (e.g., 24-48 hours).

Removal and evaluation: Remove the dressing and evaluate the skin for signs of irritation (e.g., redness, swelling, itching).

Determination of Homogeneity:

The formulation was tested for the homogeneity by visual appearance and by touch.

Spread ability Test: The time it took two slides to separate from the cream, which was placed between the slides under a particular force, was used to determine spread ability. The faster the two slides can be separated, the greater their spread ability. There were two sets of regular-sized glass slides. The cream mixture was then transferred on an appropriate-sized slide. The formulation was then discussed on the following slide. When applying a predetermined load to the upper slide, the cream between the two slides was equally pressed to form a thin layer.

After removing the weight, the slides were scraped clean of any leftover formulation. After removing the weight, the slides were scraped to remove any excess formulation. Weight, together with the higher slide's force allows it to slide off easily. It was timed how long it took the upper slide to detach. The determinations were carried out in three times and the average are readings was recorded and calculate.

$$S=m*l/t$$

Were,

S - Spread ability

m - Weight tied to upper glass slide.

l - Length moved on a glass slide

t - Time taken.

The determinations were carried out in three times and the average are readings was recorded and calculate.

Removal: The ease of removal of the creams applied was examined by washing the applied part with tap water.

After feel: slipperiness and amount of residue left after the application of fixed amount of cream was checked.

Type of smear: After application of cream, the type of film or smear formed on the skin were checked.

CONCLUSION

The study used in-vitro procedures to test the efficacy of traditional herbs in removing eye outlines. This study is primarily concerned with the development and evaluation of the under-eye cream emphasizes the extract's cosmetic value. It reduces dark circles beneath the eyes and can be further studied for anti-tyrosine and anti-wrinkle qualities.

This study aims to investigate the potential of extracts for cosmetic applications. Cosmetics have become increasingly popular in the personal care market. The

eye cream made in this investigation was a w/o type emulsion making it easy to wash off with normal water, leading in increased customer compliance. Our investigation indicates that the formulations were highly stable, with good spread-ability and no signs of phase separation.

The formulations had a consistent pH, emollient characteristics, were non-greasy, and easily removed after use. The stable formulations were shown to be safe, with little skin reactions such as irritation and allergic sensitivity

RESULT AND DISCUSSION

Cream formulations, particularly semi-solid topical medicines, are recommended for their superior release properties, longer skin-residence length, high viscosity, and bio-adhesiveness. Flaky skin experiences less irritation and is more hydrated.

The herbal under-eye cream was created with these features in mind. The made cream was uniform and had a good appearance and consistency.

All formulations have a narrow pH range (5.6 to 7.0) and are unlikely to cause skin irritation. The cream left a non-greasy smear on the skin after application.

Determination of pH:

The pH meter was calibrated and measured the pH by digital pH meter placing in the beaker containing 100mg of the at a temperature room temperature

The formulations have a narrow pH range (5.6 to 7.0) and are unlikely to cause skin irritation

Wash ability Test:

- The eye cream is easily removable with water or a gentle cleanser, making it suitable for daily use.
- The eye cream does not leave a greasy or sticky residue on the skin after washing.

Irritancy study:

-The product does not cause redness, itching, or other adverse reactions after washing.

Determination of Homogeneity:

The eye cream batch is homogeneous and meets the required standards for physical and chemical characteristics.

Spread ability Test:

Good spread ability: The eye cream spreads easily and evenly, indicating a smooth texture. Easily removal

After feel

After using an eye cream, users often report feeling the under-eye area more hydrated, smoother, and brighter. Some users also experience a reduction in puffiness, dark circles, and the appearance of fine lines and wrinkles.

Type of smear

Dot Smear- A small dot of eye cream is applied to the skin and gently spread. This evaluates the product's absorption and texture.

- In this formula 1 was better result as compare to other formulation.

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