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Formulation and Evaluation of Antioxidant under Eye Gel Using Crepe Jasmine Flower and Mango Leaf Extract

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ABSTRACT: In the digital age, the term "eye strain" is frequently used. It happens when you focus on a certain task for a long time and your eyes become fatigued. It manifests as headache, increased sensitivity to light, blurred or double vision, exhausted, burning, itchy, or itchy eyes, dry eyes, and occasionally wet eyes. Eye strain can be uncomfortable and bothersome. Additionally, it causes major or long-term effects such cataracts, age-related macular degeneration, retinal issues, and sleep disturbances. Software engineers and drivers are two groups of workers who are significantly impacted by eyestrain. Due to unpredictable weather and irregular driveways, drivers—especially truck drivers—may have to exert themselves for extended periods of time. Due of their constant exposure to flare or bright light, they get sleep problems and eyestrain. Software developers who spend a lot of time staring at computer screens and other digital biases suffer from "computer vision syndrome," also known as "digital eyestrain." Long-term eye damage results from their extended exposure to blue screen light. These are modest sensations that can be alleviated by relaxing the eyes. By relaxing the veins surrounding the eyes and providing a calming sensation, a cool eye mask can help alleviate the symptoms of eyestrain as you sleep. This article aims to develop an under eye gel using Tabernaemontana divaricata and Mangifera indica generally known crepe jasmine flower and mango leaf respectively.[1]

KEYWORDS: Antioxidant, Anti-wrinkle, Under eye gel, Crepe Jasmine, Mango Leaf, Herbal Cosmetics.

1. INTRODUCTION

The human eyes are the "Windows of our Soul" Dark circles are among the most common conditions that affect people of all ages. The sensitive skin under the eyes allows blood to soak through. As the blood passes through the big veins, the skin turns blue. When the skin around the eyes is too thin, dark circles may appear. When melanin synthesis is higher than normal, the area around the eyes appears darker than usual. The condition is known as periorbital hyperpigmentation.[2]

Dark circles behind the eyelids or around the eyes are a frequent condition that can affect people of all ages. It is also known as a persistent, round darkening of the skin surrounding or beneath both eyes. Dark circles can be caused by excessive pigmentation, eye bag shadows, infra-orbital fat prolapse, infra-orbital sagging and wrinkles, and thin, translucent skin above the orbicular isoculist muscle[2] . Dark circles may occur as a result of a variety of endogenous and environmental variables, including sex, ageing, anatomical variations, atopic dermatitis, dryness, heredity, and other physical issues. Excessive pigmentation, tear troughs, shadowing from infra-orbital laxity and wrinkles, thin, translucent skin on top of the orbicular isoculi muscle, shadowing from infra-orbital fat herniation, and vein running are some of the clinical variables that contribute to dark circles[2].

Among the thinnest parts of the body is the skin beneath the eyes. Because of this, it is simple for blood vessels to protrude through the skin, giving puffy eyes their swollen, black appearance. A number of things, including fluid retention from excessive alcohol or salt consumption, emotions, particularly crying, allergies, hormone fluctuations, lack of sleep, and other things, can result in puffy eyes. There are a number of suggested techniques to lessen puffiness under the eyes, including applying a haemorrhoid cream to the affected area, cutting back on alcohol or salt, getting adequate sleep, applying cold cucumber slices, chilled damp tea bags, or iced metal teaspoons to the eyelids, and more[2]. Blood

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flowing through the big veins near the skin's surface can give the extremely thin skin beneath the eye a bluish tinge. The circles appear darker the more translucent the skin. Periorbital hyperpigmentation is the condition where the eyes seem darker due to an excess of melanin production surrounding them[3].

One of the best-selling cosmetics worldwide is eye care. There are a lot of under-eye gels on the market right now. The following are some of the most often reported adverse effects of the eye gels now on the market: redness, burning, itching, peeling, and swelling[4].

II. MATERIALS AND METHODS

INGREDIENTS	PART	IMAGE	USE
Crepe jasmine	Petals of flower		Antioxidant, Anti-wrinkling, soothening effect, Moisturizer, Healing sore and reduce the dryness of the eye, Anti-aging.
Mango leaf	Leaves		Antioxidant, Acne treatment, Anti-aging, Skin brightening, Wound healing, Soothening.

Sl.No	INGREDIENTS	ACTIVITY
1.	Crepe jasmine flower	Anti-oxidant
2.	Mango leaf	Anti-oxidant
3.	Methyl Paraben	Preservative agent
4.	Triethanolamine	pH Adjuster
5.	Glycerine	Humectant
6.	Carbopol 940	Gelling agent
7.	Rose water	Natural fragrance
8.	Water	Solvent and vehicle
9.	Ethanol	Solvent and penetration enhancer
10.	Olive oil	Soothing agent

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III. FORMULATION

Sl.No	INGREDIENTS	QUANTITY
1.	Mango leaf extract	2.5 ml
2.	Crepe jasmine flower extract	1.25 ml
3.	Carbopol 940	1g
4.	Methyl Paraben	2.5 g
5.	Glycerine	10 ml
6.	Rose water	0.1 ml
7.	Triethanolamine	0.2 ml
8.	Distilled water	20 ml

IV. MATERIAL COLLECTION

The different parts of plant which having Anti-oxidant property was selected. The parts of plants were selected according to above table like flower and leaves of herbal plants.

PREPARATION

1) Collection of herbal plants.
2) Drying and maceration of mango leaves.
3) Maceration of crepe jasmine flower.
4) Collection of other excipients.
5) Filtering of macerated product.
6) Mixing of ingredients.
7) Packing, labeling and storage.

V. EVALUATION

The prepared Anti-oxidant under eye gel was evaluated by following parameters.

Organoleptic Evaluation	Physiological Evaluation	In-vitro Evaluation
Colour	Spreadability	Anti-oxidant test
Odour	pH measurement	
State	Washability	
Consistency	Viscocity	
Texture		

➢ **Organoleptic Evaluation**

By utilizing sensory organs like eyes or nose, the examination of the formulation performed under this evaluation, and it includes macroscopic characteristics of the product such as colour, odour, state, consistency and texture.

➢ **Physiological Evaluation**

- **Spreadability**

Place the excess gel between two glass slides. Put a weight on the glass slide to compress the gel to uniform thickness. Measure the time it takes to separate the two slides. A short time indicates better spreadability.

- **pH Measurement**

Rinse the pH electrode with distilled water and blot dry between measurements. Immerse the pH electrode into the gel sample and allow the reading to stabilize. Record pH readings and repeat measurements as necessary for accuracy.

- **Washability**

A small amount of the gel is applied to the surface (glass slide) and then washed off with water.

- **Viscocity**

The viscocity of the gel was determined using Brookfield viscometer.

➢ **In-Vitro testing**

Anti-oxidant test using DPPH Method:

The procedure is as follows;

Standard Preparation:

- Weigh 4.3 mg of DPPH in a 100 ml volumetric flask sonicate and makeup the volume to the mark with methanol.

Sample Preparation:

- Weigh about 250 gm of sample prepared in 100 ml methanol.
- 2 ml DPPH + 1 ml methanol+ 1 ml sample
- 2 ml DPPH+ 0.5 ml methanol+ 1.5 ml sample
- 2 ml DPPH +0 ml methanol+ 2 ml sample
- The reaction mixture incubated at 37^0C and measured at 516 nm.

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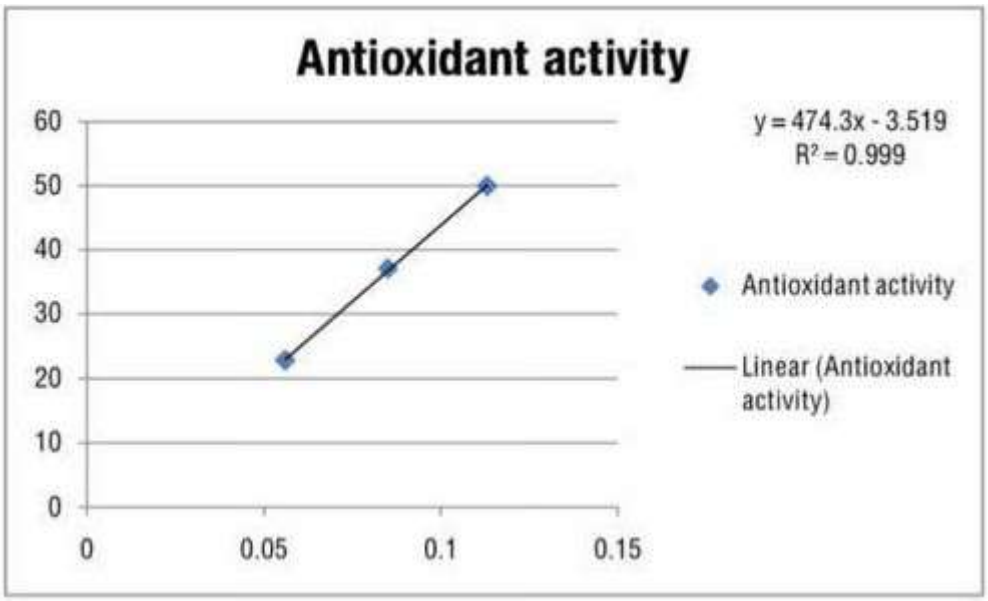
DPPH Activity = $\frac{\text{Absorbance of control- Absorbance of sample}}{\text{Absorbance of control}}$ x 100

VI. OBSERVATION

Sl. No.	Parameters	Observation
1.	Colour	Crystal yellow
2.	Odour	Pleasant odour
3.	State	Semisolid
4.	Consistency	Gelly
5.	Texture	Slimy
6.	Spreadability	Good
7.	Viscocity	2400cp
8.	Washability	Washable
9.	pH	5.3

Anti-oxidant test:



VII. CONCLUSION

From this study, Mangifera indica and Tabernaemontana divaricata extracts was successfully prepared and the herbal under eye gel showed acceptable physical properties, spreadabilty, washability and viscosity. Finally it was concluded that the herbal under eye gel was prepared by using carbopol 940 and glycerine have emerged as promising and efficacious agents with very good skin cooling and skin moisturizing properties. Overall results explained that, the herbal under eye gel have promising anti-oxidant property and can be considered safe to use as they are formulated from herbal extracts.

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