

MURRAYA KOENIGII FOR SKIN BRIGHTENING: COMBINING TRADITIONAL WISDOM AND MODERN FORMULATION TECHNIQUE FOR FRECKLES CREAM

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ABSTRACT

Freckles and blemishes are one of important features of human appearance, which could be used for a variety of potential applications such as face recognition, malignant melanoma early diagnosis and concealing cream simulation. This paper introduces novel approach to skin freckles extraction, based on precise open skin detection using integration of texture, shape and color features. The proposed approach allows detecting and retouching each freckle separately and independently one from another. The process is starting with face location and exact typical facial features extraction such as open skin, eyes and mouth and finishing with freckle masks. Freckles retouching procedure is twofold: firstly, the skin inside of freckle mask is replaced with surrounding not freckle skin and then alpha-blending with the original photo is applied in order to simulate the power of concealing cream. Experiments with real human photos show high effectiveness of the proposed technique.

KEYWORDS: *Murraya Koenigii*, Anti-Freckle cream, Aloe vera, Almond oil, Formulation, Evaluation.

INTRODUCTION

Freckles cream is a skincare product designed to lighten or reduce the appearance of freckles, sunspots, and other forms of hyperpigmentation on the skin. Freckles are small, brownish spots caused by an overproduction of melanin, often triggered by sun exposure. While freckles are harmless, some individuals may seek ways to fade or even out their complexion, which is where freckles creams come in.

These creams typically contain ingredients that target melanin production, such as hydroquinone, kojic acid, retinoids, vitamin C, and alpha hydroxy acids (AHAs). Hydroquinone, for example, is a well-known skin-lightening agent that inhibits melanin formation, helping to reduce the appearance of freckles over time. Other ingredients like retinoids can promote cell turnover, while vitamin C offers antioxidant benefits and helps brighten the skin.

While freckles creams may be effective, results can vary, and it's important to note that these products should be used with care. Overuse or misuse of certain ingredients, especially those that cause photosensitivity, can lead to skin irritation or further pigmentation issues. It's essential to apply sunscreen daily when using these products to protect the skin from further sun damage and prevent the appearance of new freckles. Always consult with a dermatologist before trying new treatments, especially for sensitive skin.

Benefits of Freckle Cream

- **Evens skin tone:** Freckles cream helps to even out skin tone and reduces the appearance of freckles and dark spots.
- **Reduces dark spots:** The cream reduces the appearance of dark spots and freckles, giving the skin a more uniform color.
- **Brightens skin:** Freckles cream contains ingredients that brighten the skin, giving it a healthy and glowing appearance.
- **Reduces hyper-pigmentation:** The cream helps to reduce hyper-pigmentation, which can cause uneven skin tone.
- **Anti-aging benefits:** Some freckles creams contain anti-aging ingredients that help to reduce fine lines and wrinkles, giving the skin a more youthful appearance.

Murraya Koenigii

M. koenigii is an unarmed, semi deciduous aromatic shrub or small tree with slender but strong woody stem and branches covered with dark grey bark, leaves are imparipinnate, glabrous, and very strongly aromatic. Leaflets 9-25 or more, short stalked, alternate, gland dotted and strongly aromatic.



Fig.: Murraya Koenigii.

The stem of *M. koenigii* is an aromatic and more or less deciduous shrub or small tree upto 6 meters in height and 15 to 40 cm in diameter. The main stem is dark green to brownish. The bark of the stem can be peeled off longitudinally which exposes the white wood underneath. Flowers are small, white fragrant ebracteate, calyx deeply five cleft, pubescent. Petals five, free, whitish, glabrous and with dotted glands. Fruits occur in close clusters, small ovoid or sub-globose, glandular, thin pericarp enclosing one or two seeds having spinach green color.

Chemical constituents: The chemical analysis report has shown that *Murraya koenigii* contains a wide range of phytoconstituents including alkaloids, flavonoids, saponins, phenolics, tannins, terpenoids, and phytosterols. These compounds have a variety of biological activities, including anti-diabetic, Anti-oxidative, anticancer, and antiulcer.

Uses

- **Digestion:** Curry leaves can help with indigestion, constipation, and nausea.
- **Skin:** Curry leaves can help reduce acne, blemishes, and fine lines.
- **Eyesight:** Curry leaves contain vitamin A. which can help prevent vision problems.
- **Weight loss:** Curry leaves can help with weight loss by increasing metabolism and eliminating toxins.
- **Anemia:** Curry leaves are rich in iron and folic acid, which can help treat anemia.
- **Inflammation:** Curry leaves have anti-inflammatory properties, which can help with conditions like arthritis.
- **Hair:** Curry leaves can help promote hair growth and a healthy scalp.
- **Stress:** The aroma of curry leaves can help reduce stress and anxiety.
- **Immunity:** Curry leaves can help boost the immune system.
- Curry leaves can be used to treat morning sickness, nausea, and vomiting.
- Curry leaves can be used as a laxative.
- Curry leaves can be used to treat wounds, burns, and skin rashes.

MATERIALS AND METHODS

List of Ingredients and Excipients Used for the Preparation of Freckle Cream and their Role

The plants for the study were selected, procured from market shade dried, powdered coarsely, and extracted with the hydro-alcoholic solution and used for the formulation. The plant materials used for the study are.

Ingredients Used in Formulation

Active Pharmaceutical Agent (API)

- Aloe vera purchase from local market.
- Eucalyptus purchase from local market.
- Almond purchase from local market.
- Turmeric purchase from local market

Excipients

- Beeswax was purchased from S.D fine chem.Pvt Ltd.
- Glycerole was purchased from S.D fine chem.Pvt Ltd.
- Cetyl alcohol was purchased from S.D fine chem.Pvt Ltd.
- Rose water was purchased from S.D fine chem.Pvt Ltd.
- Methyl paraben was purchased from S.D fine chem.Pvt Ltd.

Various Materials and Their Role in Freckle Cream Formulation are Listed Below in The Table

Table: Materials and their role.

Sr No.	Ingredients	Role of Ingredients
1.	Murraya Koenigii	Antimicrobial Properties
2.	Aloevera	Soothing And calming
3.	Eucalyptus Oil	Decongestant
4.	Almond Oil	Vitamin E And Skin Regeneration
5.	Turmeric Oil	Hyper-Pigmentation and Curcumin
6.	Beeswax	Stability And Texture
7.	Glycerol	Humectant (Moisturizing Agent)
8.	Cetyl Alcohol	Emulsifies
9.	Rose Water	Anti-Bacterial
10.	Methyl Paraben	Preservative

Materials and Their Composition

Table: Materials and their role.

Sr. No	Ingredients	Composition
1	Murraya Koenigii	1ml
2	Aloevera	30gm
3	Eucalyptus oil	1ml
4	Almond oil	2ml
5	Turmeric oil	2ml
6	Beeswax	3gm
7	Glycerol	7ml
8	Cetyl alcohol	3gm
9	Rose water	Q. S
10	Methyl paraben	0.5gm

EQUIPMENT

Table: Equipments.

Sr. No.	Equipments	Role/Use
1.	Weighing Balance	For Weighing
2.	Grinder	For Grinding
3.	Tray Dryer	For Drying
4.	Water Bath	For Heating
5.	pH meter	For determination pH

API (ACTIVE PHARMACEUTICAL INGREDIENTS)

Murraya Koenigii

- Antioxidant
- Anti- inflammatory
- Skin Healing
- Brightening
- Anti- bacterial
- Enhances glow
- Nourishes skin



Fig: Murraya Koenigii.

Aloevera

- Acne
- Sunburn pain and swelling
- Minor burns
- Cuts or skin wounds
- Fungal infections, such as ringworm and tinea versicolor
- Eczema (atopic dermatitis)
- Rosacea
- Sun or chemically damaged skin/wrinkles
- Bug bites



Fig.: Aloevera.

Eucalyptus oil

- Antimicrobial
- Antioxidant
- Anti-inflammatory properties

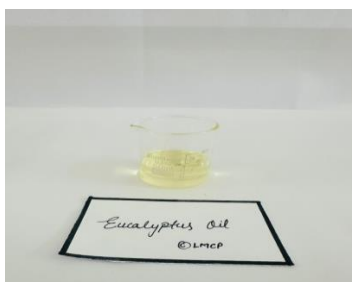


Fig.: Eucalyptus oil.

Almond oil

- Moisturizing
- Rich in Vitamin E
- Soothing
- Improves skin tone
- Anti- aging



Fig.: Almond oil.

Turmeric oil

- Anti- inflammatory
- Antioxidant – rich
- Brightening
- Antibacterial
- Healing



Fig.: Turmeric oil.

EXCIPIENTS**Beeswax**

- Protective Barriers
- Skin Softening
- Promote Healing
- Rich in vitamins
- Increase shelf life

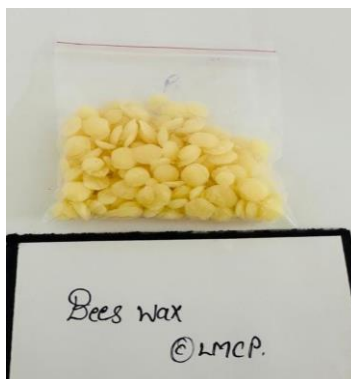


Fig.: Bees wax.

Glycerol

- Moisturizing
- Skin Shoftening
- Reduses Acne
- Keep skin young
- Protects skin
- As a humectants

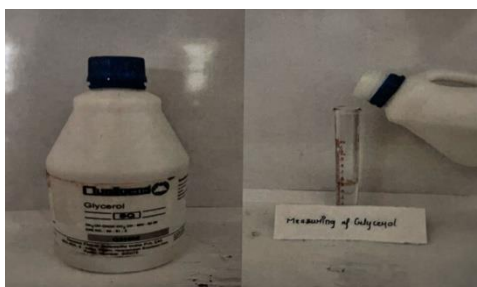


Fig.: Glycerole.

Cetyl alcohol

- Cetyl alcohol helps prevent creams from separating into oil and liquid.
- Emulsifier
- Thickening agent.



Fig.: Cetyl alcohol.

Rose water

- It is used to maintain fragrance
- Rose water is a soothing Agent.
- Moisturizing ingredient.
- It also has anti-bacterial property.
- Antiseptic.



Fig: Rose Water.

Methyl Paraben

- It prevents germ growth.
- It is also an antifungal preservative.
- It helps to increase shelf life.



Fig: Methyl paraben.

Process of the preparation of freckle cream

Take a cetyl alcohol, glycerol, beeswax, almond oil, eucalyptus oil, aloe vera in borosilicate glass beaker at 75c and maintain that heating temperature (Oil Phase)



In other beaker, dissolve all API ingredients (Alovera, methyl paraben) in Rose water by maintaining temperature 75c with water bath (Aqueous Phase)



Then gently added heated oil phase in heated aqueous phase with continue stirring. (Disperse phase)



When the cream is formed, then add fragrance. Then transfer into the cream container and mix cream in geometric manner to provide a smooth texture and for mixing of all ingredient.



The prepared cream was evaluated by different parameters. And result was mentioned and concluded.

Evaluation Parameter of Freckles Cream**Physical Evaluation**

Formulated Freckle cream was further evaluated by using the following physical parameters colour, odour, consistency, and state of the formulation.

Colour

The color of the cream was observed by visual examination. The greenish color was obtained

Odor

The odor of cream was found to be characteristics.

Consistency

The formulation was examined by rubbing cream on hand manually. The cream having smooth consistency. Cream did not leave greasy substances on skin surface after application.

State

The state of cream was examined visually. The cream having a semisolid state.

Determination

Accurately weighed 1 gm of sample was dissolve in 10ml of water. The pH of the formulation was obtain 5.73.

Spreadability Test

The Spreadability of is crucial for its behaviour on the skin. A small sample was placed on a watch glass, and another glass was placed above it. A 100 g weight was placed on the watch glass. The time it took for the liquid to spread was measured, which was found to be 4 cm in 60 seconds It was calculated by using following formula:

$$S = m \times l / t$$

S= Spreadability

m=Weight placed on slide

l=Length of the glass slide

t= Time taken in second

Washability Test

The product was applied on hand was observed under running water. The formulation of freckle cream was easily washable.

Stability testing

Stability testing was carried out for Formula no. 2 by keeping 50 g of cream at 45°C and another 50 g at room temperature. It was checked for any visual disturbances and phase separation from time to time over a period of 1 month.

Irritation test

Cream shows no redness, irritation, oedema, or inflammation during irritation studies. These formulations are safe to use for the skin and the results.

Homogeneity

The Homogeneity of freckle cream was found to be Good.

Image of Evaluation Parameters

Determination of pH



Fig.: pH meter.

Determination of Spreadability



Fig.: Spreadability test.

Washability Test



Fig.: Washability test.

Irritation test



Fig.: Irritation test.

RESULTS & DISCUSSION

Organoleptic Evaluation

Table: Effect of freckle cream.

State	Semi-solid
Color	Greenish
Odor	Aroma
Texture	Smooth
Consistency	Good

Effect of freckle cream in organoleptic evaluation

The Composition of Freckle Cream formulated in the laboratory was found to be compared with various parameters such as appearance, colour, odour and consistency, pH, spreadability, washability, irritancy, homogeneity. Thus, the developed formulation can be used as an effective cosmetic formulation for using protects the skin from aging caused by toxins and environmental triggers, and restores and replenishes dull complexions for more revitalized, healthy-looking skin the body muscles and make skin health.

EVALUATION PARAMETERS

Table: Evaluation Parameter of Freckles Cream.

Sr. No.	Parameters	Observation
1	State	Semisolid
2	Color	Greenish
3	Odor	Good
4	Texture	Smooth
5	Consistency	Good
6	pH	5.73
7	Homogeneity	Good
8	Irritability	Non irritability
9	Washability	Good

DISCUSSION

The present research researcher mainly focused on the formulation and evaluation of Freckle cream using various evaluation parameters. This cream formulation was o/w type of emulsion: hence this formulation was easily washed with normal water after application. The prepared formulation had a good spreadability. Viscosity and pH of the cream was in range. The freckle cream was non-greasy in nature and easily removable after application. The formulation was non-irritant and is not harmful to the skin. The prepared cream showed no phase separation while storage, so this cream has a broad scope in future market because there is no side effect, cost effective, made from natural sources. This cream shows various type of skin benefits like-moisturizing, nourishing, reduce pigmentation, produce soothing effect.





Fig.: Prepared Freckle Cream.

CONCLUSION

If you hate your freckles, there's hope for you. Try a freckle cream and watch as your skin tone lightens over time. It may take a month or two, but you can make those spots fade away. If you've had success with one of these products, we love to know. Please leave us a comment below.

One of the best ways to remove freckles from your body is to utilize products that contain ingredients specifically made for the purpose of lightening your skin. There are many different kinds of ingredients to choose from: the herb's aloe-vera, eucalyptus, almond, turmeric, beeswax, glycerol, cetyl alcohol, rose water, and methyl paraben.

The present research focuses on the potential of freckle cream which can be used for the purpose of dark spot reduction. The uses of cosmetics such as creams have been increased in many folds in personal care system. The use of bioactive ingredient like in cosmetic cream influence biological functions of skin and also give additional lightening effect on skin. The Curry Leaf Cream proves to be beneficial for skin. Keeping in view, the cream does help to reduce dark spots as well as it lightens skin tone to get a brighter, fresh and healthy glow on skin. Skin-lightening cosmetics are in big demand across the world, and this review serves to the curry leaf cream that can be available for that purpose and the modes of action through which the lightening of skin is crucial.

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