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Cream Curry Leaf for Dark Spot Reduction

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Abstract

Curry leaves are an important part of spicing up dishes, thus used for garnishing as well as a taste enhancer. Apart from its culinary uses, it has a vast number of therapeutic applications in medicinal as well as cosmetic uses. Curry leaves, biologically named as *Murraya koenigii* which belongs to family Rutaceae are also called as Meethi Neem or Karipatta or Sweet Neem Leaves. It has a characteristic aroma. It is an important herb mainly of Asian origin. The present review elaborates the description of curry leaves, its chemical composition and about the bioactive compound β-caryophyllene present in it. β-caryophyllene is a sesquiterpene, it has properties such as inhibition of melanogenesis and can reduce melanin synthesis. Curry leaves cream is formulated for the purpose of reduction of dark spots due to presence of β-caryophyllene present in curry leaves. The product should be safe for regular use and must be cosmetically acceptable.

Keywords: Therapeutic, Aroma, Sesquiterpene, Melanin, β-caryophyllene, Bioactive.

INTRODUCTION

Murraya koenigii commonly known as Curry leaf or Karipatta or sweet neem leaves which belongs to family Rutaceae is an important part for its characteristic aroma and medicinal value. *Murraya koenigii* is an aromatic semi-deciduous shrub or a small tree upto 6 metre in height found throughout India up to an altitude of 1500 metres and are cultivated for its aromatic leaves. Curry Leaves are highly aromatic when rubbed or crushed. Margin is slightly toothed. Leaves are smooth and shiny with paler undersides. Leaflets are lanceolate. The leaves are pale and smooth with shiny undersides. Leaves contain 64.9% moisture. The leaflets are attached to the rachis (leaf stalk forming the main axis of the leaf) by a 0.5 cm long reddish petiole in alternate to sub-opposite arrangement (leaflets single and alternating to almost paired). *Murraya koenigii* is traditionally used as a whole or in parts of the plant.

Scientific Classification: -

Kingdom Plantae – Plants
Subkingdom Tracheobionta – Vascular plants
Superdivision Spermatophyta – Seed plants
Division Magnoliophyta – Flowering plants
Class Magnoliopsida – Dicotyledons
Subclass Rosidae- Order Sapindales
Family Rutaceae – Rue family
Genus Murraya J. Koenig ex L. – murraya
Species Murrayakoenigii (L.)Spreng. – curry leaf tree.

A number of chemical constituents from every part of plant have been extracted. The essential oils yielded hydrocarbon compounds such as α- pinene and β-pinene, β-caryophyllene, β- phellandrene and β-elemene and γ-elemene. The present review summarizes the literature on the phytoconstituent-β-caryophyllene, its biological activity and pharmacological action. β- caryophyllene is a natural, bicyclic sesquiterpene, it is active compound in the formulation of curry leaf cream which aids in reduction of dark spots. β-caryophyllene can inhibit melanogenesis and can reduce melanin synthesis. The aim of the present review is to formulate curry leaf cream with the purpose of dark spot reduction and in addition to provide skin lightning properties when applied. Melanin is produced by oxidation of amino acid. The present review summarizes the literature on isolation of phytoconstituent-β-caryophyllene, its biological activity and pharmacological action. β-caryophyllene is a natural, bicyclic sesquiterpene which

is present in curry leaf and also, it is active compound in the formulation of curry leaf cream which aids in reduction of dark spots. β-caryophyllene can inhibit melanogenesis and can reduce melanin synthesis. The aim of the present research project is to formulate curry leaf cream with the purpose of dark spot reduction and in addition to provide skin lightning properties when applied. Melanin is produced by oxidation of amino acid Tyrosine, followed by polymerization. The melanin pigments are produced in a specialised group of cells known as melanocytes, which are found in basal layer of the epidermis. In human skin, melanogenesis is initiated by exposure to UV radiation causing the skin to darken. Melanin is an effective absorbent of light. Melanogenesis leads to long lasting pigmentation which is in contrast to pigmentation that originates from oxidation of already existing melanin. Abnormal melanin production plays a part in dark spots caused by the sun. The most common cause of dark spots is sun damage.

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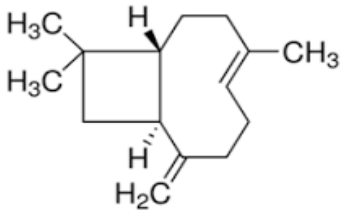

Structure of β-caryophyllene

MATERIALS AND METHODS

Formulation of the Cream:

The curry leaf cream was formulated by the ingredients in Table 1, it is prepared by fusion method considering its nutritional values of *Murraya koenigii* in Table 2. Oil in water cream were formulated. The emulsifier triethanolamine and other oil soluble components such as petroleum jelly, stearic acid, and cetyl alcohol were dissolved in Oil phase and the preservative: Methyl paraben, humectant: glycerin and water were dissolved in Aqueous Phase in separate beakers. Both beakers were heated on water bath upto 80 ºC. Curry leaf oil or powder was added as soon as the components of oil phase melts, and both the beakers were taken out of the water bath. The oily phase is added to the aqueous phase with constant stirring until a cream is formed. Perfume like lavender oil was added when the temperature dropped to 45 ºC ± 50 ºC. A Faint Green Colour o/w cream having a characteristristic aroma of *Murraya koenigii* were formulated.

The formulated cream may also treat a condition called melasma. Dark spots can develop anywhere, but they are most likely to appear on the parts of the body that receive the most sun exposure, including the face, back of hands, shoulders, arms and back while usually several small spots can group together and form larger areas of darkened skin. The formulated curry leaf cream which contains β-caryophyllene can give effective dark spot reducing activity along with lightning of skin tone. β-caryophyllene has a GRAS (Generally recognized as safe) and it is approved by FDA (Food and Drug Administration) for cosmetic use. It should be free from toxicity or any toxic residue. It will not cause any irritation to skin and when regularly used, shall be cosmetically accepted.

Table 1: Composition of Cream

Sr. No	Ingredients	Quantity Taken	Role of Ingredient
1	Curry leaf (in oil or powder form)	0.5 ml /gm	Dark spot Reduction
2	Petroleum Jelly	2 gm	Lubricant
3	Stearic acid	2.4 gm	Thickening agent
4	Cetyl alcohol	1.6 gm	Emmollient
5	Glycerin	1.5 ml	Humectant
6	Triethanolamine	0.1 ml	Emulsifying agent
7	Methyl paraben	0.018 gm	Preservative
8	Lavender oil	Qs	Perfume
9	Purified Water	20 ml	Vehicle

Table 2: Nutritional Values of *Murraya koenigii* leaf

Sr. No	Nutritional Value per 100 gm	Dry Curry leaf	Fresh Curry leaf
1	Protein	12 gm	6 gm
2	Fat	5.4 gm	1 gm
3	Carbohydrate	64.3 gm	18.7 gm
4	Calcium	0.204 gm	0.83 gm
5	Iron	12 mg	0.9 mg
6	β-caryophyllene	0.006 mg	0.003 mg

Evaluation of the Cream:

The formulated cream was evaluated on the basis of following tests-

1. Physical properties: The Cream was observed for Colour, Odour, Appearance and Texture as mentioned in Table 3.
2. Determination of pH: 5 ± 0.01 gm of the cream was weighed accurately in a 100 ml beaker. 45 ml of water was added and dispersed in it. The pH was determined at 27 ºC using the pH meter.
3. Patch Test: About 1-3 gm of cream to be tested was placed on a piece of fabric and applied to the sensitive part of the skin, example behind the ears. The cream was applied to an area of 1 square metre of the skin. Control patches were also applied. The site of patch is inspected after 24 hours.

Spreadability Test - An important criterion for semisolids is that it possesses good spreadability. Spreadability is a term expressed to denote the extent of area to which the cream readily spreads on application to the skin. The therapeutic efficacy of a formulation also depends on its spreading value. A special apparatus has been designed to study the spreadability of the formulations. Spreadability is expressed in terms of time in seconds taken by two slides to slip off from the formulation, placed between, under the application of a certain load. Lesser the time taken for the separation of the two, better the spreadability. Two glass slides of standard dimensions were selected. The formulation whose spreadability had to be determined was placed over one of the slides. The other slide was placed on top of the formulations was sandwiched between the two slides across the length of 5 cm along the slide. 100 g weight was placed up on the upper slide so that the formulation between the two slides was pressed uniformly to form a thin layer. The weight was removed and the excess of formulation adhering to the slides was scrapped off. One of the slides was fixed on which the formulation was placed. The second movable slide was placed over it, with one end tied to a string to which load could be applied by the help of a simple pulley and a pan. A 30 g weight was put on the pan and the time taken for the upper slide to travel the distance of 5.0cm and separate away from the lower slide under the direction of the weight was noted.

The Spreadability was then calculated from the following formula:

Spreadability= m ×l /t

Where,

m = weight tied to the upper slide (30g)

l =length of glass slide (5cm)

t =time taken in seconds

RESULTS

Table 3: Physical Properties of the formulated cream

Sr. No	Parameters	Inference
1	Colour	Faint Green Colour
2	Odour	Characteristic Aroma
3	Appearance	Semisolid
4	Texture	Smooth
pH (at 27 ºC)	5.9	

Table 4: pH Determination test and Spreadability Test

Sr. No	Type of Cream	Time (in seconds)	Spreadability (g cm/sec)
1.	Marketed Cream	15	14.6
2.	Curry leaf Cream (Formulated Cream)	14	13.4

CONCLUSION

The pH of the prepared cream was found to be around 6 which is suitable for topical application because the pH of the skin is between 4.5– 6. The Spreadability Test showed that formulation have better spreadability when compared with the marketed cream; which is perfectly challenged to Marketed Creams. The results of pH and spreadability are summarized in Table 4. The formulated cream shows no redness, edema, inflammation or irritation during Patch Test. These formulations are safe for use and the tests also conclude that the formulated cream serves as a provision of barrier to protect the skin.

The present research focuses on the potential of Curry leaf 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 helps 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 commercially available for that purpose and the modes of action through which the lightening of skin is crucial.

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