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FORMULATION AND EVALUATION OF HERBAL OINTMENT USING LANTANA CAMARA FOR HEALING ACTIVITY

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Abstract: Lantana Camara commonly named as Indradhanu, Ghaneri, Tantani (Marathi) Raimuniya (Hindi). Even in areas where modern medicine is available, the interest in herbal medicines and their utilisation has been increasing rapidly in recent years. Plant-derived substances and herbal medicines have recently attracted great interest in their versatile application, as medicinal plants are the richest source of bioactive compounds used in traditional and modern medicine.

The present research aimed to formulate and evaluate the herbal ointment containing Lantana Camara leaf and flower extract. The ethanolic extracts were prepared by using the Decoction method. Extracts of the plant were incorporated into an ointment base and evaluation of its physicochemical parameters like colour, odour, PH, physical examination, consistency, spreadability, washability etc. The physicochemical evaluation of the developed formulation showed uniform colour dispersion without lumps. Stability testing at different temperatures indicated no change in spreadability, along with easy washability and good spreadability.

Keywords:

Lantana Camara Linn., Herbal Ointment, Ethanolic Extract.

Introduction:

Since ancient time, medicinal plant is used to cure several types of health problems. Lantana camara is a widely distributed medicinal plant known for its diverse pharmacological properties. Traditionally used in various folk medicines, this plant has gained scientific interest due to its potential therapeutic applications. Among its many uses, Lantana camara has been

studied for its wound healing activity and Anti-Inflammatory. The plant contains bioactive compounds such as Tannis, flavonoids, triterpenoids, saponin and essential oils, which contribute to its antimicrobial, anti-inflammatory, healing, and antioxidant properties.

These properties play a significant role in accelerating the wound healing process by promoting tissue regeneration, reducing infection, and minimizing inflammation. As such, Lantana camara holds promise as a natural and effective agent in wound care management. It is a vibrant and versatile plant native to the tropical and subtropical region of the Americas. Renowned for its colourful and resilient flowers, lantana is frequently used in gardens and landscapes for its aesthetic appeal and hardy nature. The plant produces clusters of small, tubular blooms in a wide range of colours, including red, orange, yellow and pink, which often change hues as they mature.

Lantana Camara:

Lantana Camara Shrub

Plant Profile:

Botanical Name: Lantana Camara Linn.

Common Names: Indradhanu, Tantani, Ghaneri

Plant Family: Verbenaceae

Plant Form: Shrub

Occurrence (Special Areas): Gujarat Forestry Research Foundation, Indroda Park, Ayurvedic Udyan, Punit Van, Van Chetana Kendra, Aranya Van.

Significance: Cultivated in gardens as ornamental

The decoction of the plant is used in tetanus, malaria and rheumatism.

Some species of Lantana Camara have been used traditionally for Medicinal purposes.

Parts Used: Leaves and Flowers

Lantana Camara Leaves *Lantana Camara Flowers*

Materials and Method:

1] Preparation of Plant Material:

Fresh and healthy leaves and flowers of Lantana Camara were collected from local area. Then, plant leaves and flowers were washed thoroughly with distilled water to remove dirt and impurities. The leaves and flowers were dried under the sunlight for 2-3 days until fully dried. The dried leaves and flowers of *L. Camara* were finely grinded into fine powder by using mortar and pestle. Then passes through Sieve no.125. Weigh an appropriate amount of powdered material.

2] Collection of ingredients:

Gather all the ingredients used in formulation like Active Pharmaceutical Ingredient (API), Ointment base, Necessary Additives (Preservative, Stabilizers), Perfumes etc.

All the materials used in formulation are listed below:

Lantana Camara:

Synonym: Indradhanu, Tantani etc.

Chemical Constituents: Triterpenoids, alkaloids, flavonoids, tannins, essential oils.

Uses: Anti-microbial, anti-inflammatory, anti-oxidant, healing, anti-diabetic etc.

Beeswax:

Biological Name: Paraffin Wax

Chemical Constituents: Esters, free fatty acids, alcohols and hydrocarbons.

Uses: Used as base in ointment preparation. moisturizer, reduce stretch marks, anti-inflammatory, Heal skin condition.

Honey:

Synonym: Madh, Purified Honey

Chemical Constituents: Glucose, fructose, vitamins, minerals, amino acids, organic acids etc.

Uses: Anti-microbial, moisturiser, anti-bacterial, wound healing.

Coconut Oil:

Biological Name: Cocos nucifera

Chemical Constituents: Fatty acids, caprylic acid, capric acid, lauric acid, palmitic acid, stearic acid, oleic acid, linoleic acid, myristic acid, etc.

Uses: Anti-microbial, moisturizer, anti-bacterial, heal burns.

Olive Oil:

Biological Name: Olea Europa

Chemical Constituents: Triacylglycerol, fatty acids, mono and di acyl glycerol, and an array of lipids such as hydrocarbons, sterols, aliphatic alcohols, volatile compounds, etc.

Uses: It contains lots of vitamins, moisturizer.

Rose Water:

Biological Name: Rosa Damascena

Chemical Constituents: 2-Phenylethanol, linalool, citronellol, geraniol.

Uses: Used for Rose Fragrance.

3] Preparation of Ethanolic Extracts:

Place the weighed powdered drug in a round bottom flask or beaker. Add 70% ethanol in a ratio of 1/10 (W/V). Heat the mixture using a water bath or heating mantle at 70-80°C for 30-60 min., allowing it to gently boil. Stir occasionally. Ensure the level of ethanol doesn't drop too much due to evaporation. After boiling, cool the decoction slightly. Filter the mixture through filter paper and funnel to get a clear filtrate.

4] Preparation of Ointment:

Formulation Table of Herbal Ointment:

Sr. No.	Ingredients	Quantity to be taken
1.	Lantana Camara Powdered	4gm
2.	Beeswax	3gm
3.	Honey	1.5gm
4.	Coconut oil	0.2ml
5.	Olive oil	0.8ml
6.	Rose Water	0.1gm

Procedure for preparation of herbal ointment:

a) Initially ointment base was prepared by weighing accurately beeswax which was placed in evaporating dish on water bath. After melting of beeswax remaining ingredients were added and stirred gently to aid melting and mixing homogeneously followed by cooling of ointment base.

b) Herbal ointment was prepared by mixing accurately weighed Lantana Camara extract to the ointment base by levigation method to prepare a smooth paste with two or three times its weight of base, gradually incorporating more base until to form homogenous ointment, finally transferred in a suitable container.

Evaluation:

Colour, Texture and Odour

Physical parameters like texture, colour was examined by touch and vision perception, respectively. Individual who are sensitive to odour were chosen as a team for smell evaluation.

Consistency

Smooth and no greediness is observed.

Spreadability

The spreadability was determined by placing excess of sample in between two slides which was compressed to uniform thickness by placing a definite time. The time required to separate the two slides was measured as spreadability. Lesser the time taken for separation of two slides results better spreadability.

Spreadability was calculated by following formula:

$$S=M\times L/T$$

Where, S= Spreadability

M= Weight tide to the upper slide

L= Length of glass slide

T= Time taken to separate the sliders

LOD

LOD (loss on drying) was determined by placing the formulation in petri dish on water bath and dried for the temperature 105℃.

pH

pH of prepared herbal ointment was measured by using digital pH meter.

Extrudability

Extrudability test is the measure of the force required to extrude the material from a collapsible tube when certain amount of force has been applied on it in the form of weight. In the present study the quantity in percentage of ointment extruded from the tube on application of certain load was determined. The extrudability of prepared ointment formulations was calculated by using following **formula**:

Extrudability Amount of ointment extruded from the tube x100/Total amount of ointment filled in the tube.

Solubility

Soluble in boiling water, miscible with alcohol.

Washability

Formulation was applied on the skin and then ease extend of washing with water was checked.

Non irritancy test

Herbal ointment prepared was applied to the skin of human being and observed for the effect. The test is performed by applying the small amount sample to the hand and observed for 24hours to check the effect like redness, inflammation etc. Hence, no such effect was observed, it is non-irritant to the skin.

Result:

The Herbal formulation was prepared successfully and evaluation was carried out and results of evaluation study was as follows:

Sr.no.	Evaluation Parameters	Observation
1.	Colour	Light Greenish yellow
2.	Texture	Fine and Smooth
3.	Odour	Pleasant
4.	pH	6.2
5.	Washability	Good
6.	Spreadability (g/sec)	46.2±0.2
7.	Non irritancy	Non irritant
8.	Stability Study	Stable
9.	Loss on drying	2.7
10.	Excrudability	0.5gm
11.	Solubility	Soluble in boiling water, miscible with alcohol.
12.	State	Semi solid

Conclusion:

Herbal medicines have gained increased attention in modern times due to their effectiveness and minimal side effects. Traditional medicinal plant Lantana Camara have long been known for their therapeutic properties, including antimicrobial, anti-inflammatory, anti-oxidant, anti-diabetic, wound healing activities.

This study demonstrates the successful formulation and evaluation of topical ointment. This ointment could become a media to use these medicinal properties effectively and easily as a simple dosage form.

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