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Research Paper

Formulation And Evaluation of Herbal Ointment by Using *Murraya Koengii*

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ABSTRACT

The present study focuses on the formulation and evaluation of a herbal ointment using extracts of *Murraya koenigii* (curry leaves) and *Hibiscus rosa-sinensis* (hibiscus). Herbal formulations are gaining importance due to their safety, effectiveness, and minimal side effects compared to synthetic drugs. The plant materials were collected, cleaned, shade dried, and powdered. The formulated ointment was evaluated for various physicochemical parameters including color, odor, consistency, pH, and spreadability. Phytochemical screening confirmed the presence of bioactive constituents such as alkaloids, flavonoids, tannins, saponins, glycosides, and phenolic compounds, which contribute to the therapeutic activity of the formulation. The ointment also exhibited promising antimicrobial, anti-inflammatory, antioxidant, and wound healing properties. The study concludes that the formulated herbal ointment is safe, effective, and cost-efficient, making it a potential alternative to conventional topical formulations for the treatment of various skin conditions.

INTRODUCTION

Herbal ointment:-

Herbal ointment is a semi-solid, topical preparation made by blending medicinal plant extracts or powders with an oily or waxy base. It is used for external application to treat skin conditions, reduce inflammation, heal wounds, and relieve muscle/joint pain. These natural, often anti-microbial products, such as those made from

neem or turmeric, provide an alternative to synthetic medication. It is prepared by mixing medicinal plant extracts or herbal powders with a suitable ointment base such as paraffin, lanolin, or soft wax. Herbal ointments are widely used for the treatment of wounds, cuts, burns, skin infections, inflammation, rashes, and other skin disorders. Herbal formulations are gaining importance because they are natural, safe, cost-effective, and produce fewer side effects compared to synthetic medicines. Medicinal plants contain

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bioactive compounds such as alkaloids, flavonoids, tannins, glycosides, and phenolic compounds that possess antimicrobial, anti-inflammatory, antioxidant, and wound healing properties. The ointment base helps in easy application, better absorption of active constituents, and prolonged contact of the

medicine with the skin. Herbal ointments provide soothing, moisturizing, and protective effects on the affected area and help in faster healing of damaged tissues.

TYPES OF HERBAL OINTMENT:-

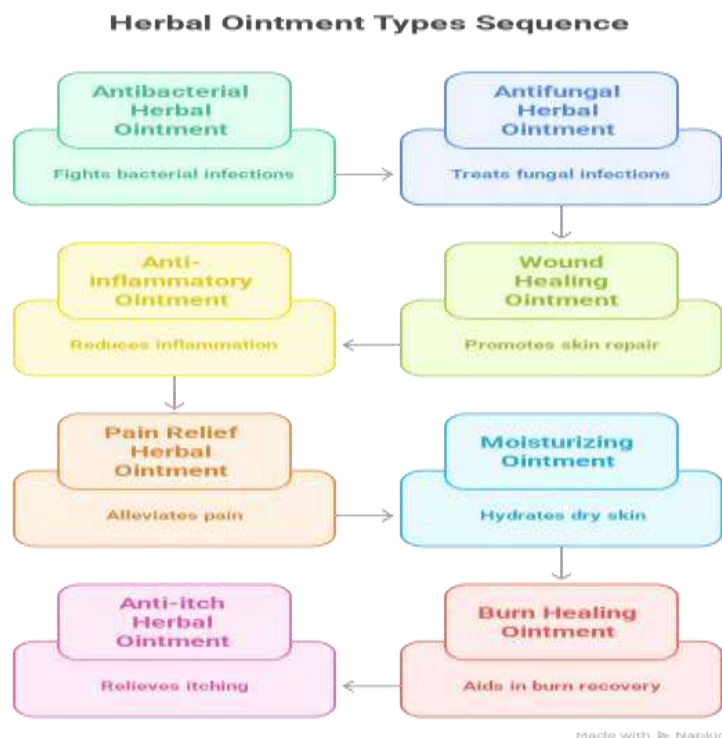


Fig. no. 1 Types of Herbal Ointment

PLANT PROFILE:-

CURRY LEAVES

Biological source:

Curry leaves consist of the fresh and dried leaves of *Murraya koenigii* Linn

Family:-Rutaceae.

The plant is commonly known as Curry leaf tree and is widely distributed in India and other tropical regions.

Common Names:- Curry leaf tree, Curry patta, Sweet neem

Major Chemical Constituents: Rich in volatile oils, carbazole alkaloids, Carbazole carboxylic acid, and flavonoids.

Uses :-

- They help keep the wound clean and support tissue repair.
- Curry leaf extract is used in herbal ointments and topical preparations for wound care.
- Curry leaves may reduce redness, swelling, and pain associated with skin injuries.
- They help in preventing microbial growth in wounds and cuts.



Fig. no. 2. Leaf of *Murraya koenigii* (Curry leaves)



Fig.no.3. Hibiscus (*Rosa Sinensis*)

HIBISCUS :-

BIOLOGICAL SOURCES:-

Hibiscus consist of the fresh and dried petals of *Rosa Sinensis* Linn

Family: Malvaceae.

Chemical constitute:-Flavonoids,Tannins, Alkaloids,Glycosides.

Uses :-

- *Rosa sinensis* is used in herbal ointments for its antimicrobial activity against skin infections.
- It helps in wound healing by promoting tissue repair and regeneration.
- The plant possesses anti-inflammatory properties that reduce redness, swelling, and irritation.

MATERIAL AND METHODS :-

Curry (*Murrayakoenigii*) leaves were procured from a local market. The stems as well as extraneous foreign material were removed. Fresh, green, un-damaged curry leaves were selected whereas, insect infested, bruised, discolored, decayed and wilted leaves were discarded before washing the leaves. The stalks of the leaves were cut from the main branches and the leaves were washed thoroughly three to four times with tap water to remove all the adhering dust, dirt particles. The curry leaves were then blanched in boiled distilled water containing 0.1 per cent magnesium oxide for 15-20 seconds. Leaves were then spread on filter paper.

Ingredient used in herbal ointment:-

Table No. 1. Ingredient used in herbal ointment

Sr.No.	Ingredients	Uses
1.	Curry leaves extract	Antibacterial
2.	Hibiscus extract	Anti-inflammatory
3.	Hard paraffin	Stiffening agent
4.	Cetostearyl alcohol	Emulsifier and stabilizer
5.	White soft paraffin	Ointment base
6.	Wool fat (lanolin)	Absorption base
7.	Methyl Paraben	Antimicrobial preservative

• **Ointment Base Ingredients:-**

1.Hard paraffin:

Hard paraffin (also known as paraffin wax or hard paraffin wax) is a solid, white, odorless mixture of high-molecular-weight hydrocarbons (alkanes) derived from petroleum, coal, or shale oil. It is characterized by its crystalline structure.

2.Cetostearyl alcohol:-

Cetostearyl alcohol (also known as cetearyl alcohol or cetylstearyl alcohol) is a mixture of solid, long-chain fatty alcohols, primarily **cetyl alcohol** and **stearyl alcohol**. It is widely used in the cosmetic and pharmaceutical industries as an emulsifier, thickener, and emollient.

3.White soft paraffin:-

White soft paraffin is a highly refined, white, semi-solid hydrocarbon blend used as an emollient to moisturize and treat dry skin conditions like eczema and psoriasis. It acts as a barrier,

preventing water loss from the skin. It is generally considered safe for all skin types, including sensitive skin.

4.Wool fat (Lanolin):-

Wool fat, commonly known as **lanolin**, is a natural, waxy secretion from sheep's wool used heavily in cosmetics, skin care (moisturizer, sore nipples), and industrial lubricants. It is yellow, fatty, and highly effective as an emollient that reduces transepidermal water loss to hydrate skin. It is hypoallergenic, sustainable, and biodegradable.

EXTRACTION OF CURRY LEAVES:-

A. Soxhlet Extraction Method:- Preparation of Herbal Ointment

Curry Leaves:-

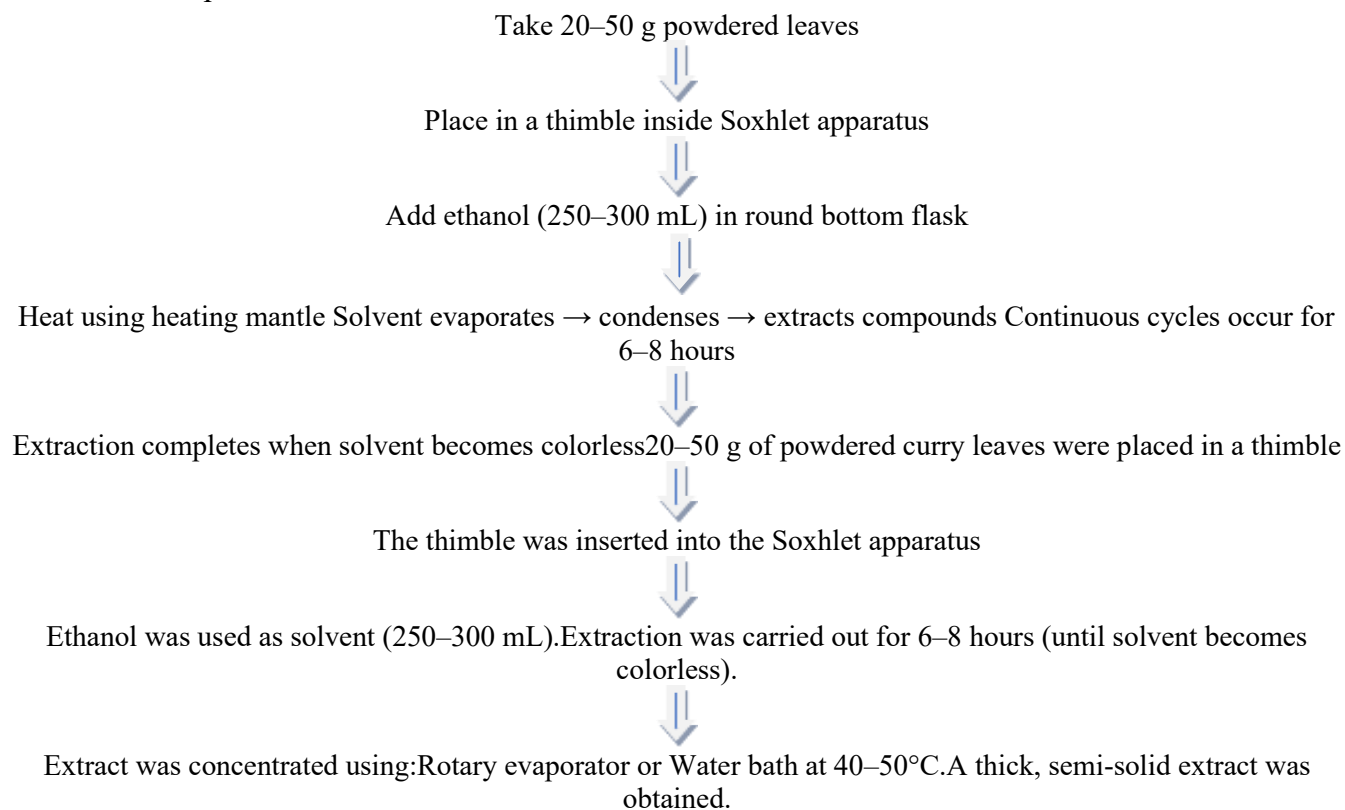




Fig.No.4. Soxhlet Apparatus Extraction Process Of Curry Leaves(Murraya Koengii)

HIBISCUS:-

. rosa-sinensis leaves were collected



They were washed using distilled water and then dried in airy conditions



The sample was then pulverized using a blender



The extraction of the leaf was done using distilled water in a hot water bath for 2 days (6 hours per day).



After extraction, the supernatant was filtered using filter paper and evaporated to dryness using a heating plate at 40-50°C



H. rosa-sinensis leaf extract was dissolved with dimethyl-sulfoxide (DMSO) to a final concentration of 0.1 mg/mL and sterilized by passing through a syringe filter (0.45 µm)



The extract was stored in sterile tubes at +4°C until used



Take 20–40 g hibiscus powder. Place in a thimble inside Soxhlet apparatus



Add ethanol (200–300 mL) in round bottom flask. Heat using heating mantle.



Solvent evaporates → condenses → extracts compounds Continue extraction for 6–8 hours Process completes when solvent becomes colorless.



Fig . No.5.Soxhlet Apparatus Extraction Process of Rosa Sinensis (Hibiscus)

PHYTOCHEMICAL CONSTITUENT:- CURRY LEAVES:-

A) Test for Alkaloids

Sr.no	Test	Observation	Inference
1.	Dragendorff's Test	Orange or orange-brown precipitate.	Alkaloids present
2.	Mayer's test	Cream or pale yellow precipitate.	Alkaloids present

(C) Test for Tannins and Phenols:-

Sr.no.	Test	Observation	Inference
1.	Ferric Chloride Test	Blue-black or green color	Tannins and phenolic compounds present

HIBISCUS (ROSA SINENSIS):-

Phytochemical examination, comprising multiple chemical tests, was performed on the testing extracts to discover secondary metabolic chemicals (flavonoids, and phenolic compounds).

Phenols Test

Sr.no.	Test	Observation	Inference
1.	ferric chloride test	blue-black color	presence of phenols

Flavonoids Test

Sr.no.	Test	Observation	Inference
1.	Lead acetate test	yellow precipitate.	Presence of flavonoids
2.	Shinoda Test	Pink/red color	Flavonoids present

A) Test for Alkaloids

Sr.no.	Test	Observation	Inference
1.	Dragendorff's Test	Orange-brown precipitate formation	Alkaloids present

2.	Mayer's Test	Cream-colored precipitate	Alkaloids present
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(B) Test for Tannins:-

Sr.no.	Test	Observation	Inference
1.	Ferric Chloride Test	Blue-black ya greenish color	Tannins present

PROCEDURE FOR PREPARATION OF HERBAL OINTMENT:-

- Hard paraffin, white soft paraffin, cetostearyl alcohol, and wool fat were weighed accurately.
- All ointment base ingredients were melted together on water bath according to decreasing order of melting point.
- The melted ingredients were stirred continuously to obtain uniform ointment base.
- Measured quantity of curry leaves extract and hibiscus extract was added slowly into the base with continuous stirring.
- The mixture was mixed properly until smooth and homogeneous ointment was formed.
- The prepared ointment was cooled at room temperature.
- Finally, the herbal ointment was filled into suitable containers and labeled properly.



Fig no.6. Herbal ointment

FORMULATION OF HERBAL OINTMENT:-

Table no. 2 . Formulation of herbal ointment

Sr. no.	Ingredients	F1	F2	F3
1.	Curry leaves extract (Murraya Koengii)	2ml	2.5ml	3ml
2.	Hibiscus extract(Rosa Sinensis)	2ml	2.5ml	3ml
3.	Hard Paraffin	2gm	2.5gm	3gm
4.	White Soft Paraffin	17.5gm	34.5gm	35gm
5.	Cetostearyl alcohol	2.5gm	3gm	3.5
6.	Wool Fat(Lanolin)	2gm	5gm	5.5gm
7.	Methyl Paraben	0.1gm	0.1gm	0.1gm



F1

F2

F3

EVALUATION PARAMETERS OF HERBAL OINTMENT

- **Antimicrobial Activity:** The ointment was tested against microorganisms to evaluate its antimicrobial effectiveness.
- **Physical Appearance:** The ointment was evaluated for color, odor, texture, smoothness, and homogeneity.
- **pH Determination:** The pH of the formulation was measured using a digital pH meter to ensure skin compatibility.
- **Spreadability:** Spreadability was checked by applying the ointment on a glass slide to observe ease of application on skin.
- **Skin Irritation Test:** A patch test was carried out on the skin to observe any irritation, redness, or allergic reaction.

ANTIMICROBIAL TEST OF HERBAL OINTMENT

The antimicrobial activity of the herbal ointment was evaluated against different microorganisms by using the agar diffusion method. The activity was observed in the form of a clear zone of inhibition around the sample. The antimicrobial effect may be attributed to the bioactive constituents present in *Murraya koenigii* and *Hibiscus rosa-sinensis*, which possess natural antibacterial and antifungal properties. The formulation was found to be effective in controlling microbial growth and may help in preventing skin infections and promoting wound healing.





Fig no. 15. Microbial test for herbal ointment

RESULT AND DISCUSSION

Formulation	Physical appearance		PH determination	Spreadability	Skin Irritation
	Colour	Texture			
F1	Dark Green	Smooth	6.2	Good	No
F2	Light green	Rough	5.8	Moderate	No
F3	Greenish brown	Smooth	6.5	Excellent	No

The formulated herbal ointments (F1, F2, and F3) showed acceptable physical characteristics with smooth texture and uniform appearance. The pH values were found to be near the normal skin pH, indicating suitability for topical application. Spreadability of all formulations was satisfactory, with F3 showing the best spreadability. No signs of skin irritation, redness, or itching were observed during the irritation study, indicating that the formulations are safe for skin application. Overall, F3 formulation showed better consistency and stability compared to other formulations.

CONCLUSION

The present study successfully formulated and evaluated a herbal ointment using extracts of *Murrayakoenigii* and *Hibiscus rosa-sinensis*. Both plant extracts were selected due to their well-known medicinal properties such as antimicrobial, anti-inflammatory, antioxidant, and wound healing activities. The ointment was prepared using

suitable base materials including hard paraffin, cetostearyl alcohol, white soft paraffin, and wool fat, which provided good consistency, stability, and spreadability. The formulation process was simple, cost-effective, and reproducible. Evaluation parameters such as physical appearance, pH, spreadability, consistency, homogeneity, and stability studies indicated that the prepared formulation was stable, smooth, and suitable for topical application. The absence of skin irritation further confirmed its safety. Overall, the herbal ointment demonstrated promising therapeutic potential and can be considered as an effective alternative to synthetic formulations for minor skin infections and wound healing.

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