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Research Article

Formulation And Evolution of Herbal Antiseptic Cream Using Murraya Koenigii Leaves Extract

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ABSTRACT

Herbal antiseptic cream is a multiuse antiseptic cream that treats all skin infection. The natural antiseptic cream was effective and potential antimicrobial agent. It is used as a preventive, curative and healing. Herbal cream useful for dry skin, cuts, scratches, minor burns, wounds, cold sores and chapped skin. The study suggests that the composition and the base of the cream are more stable and safe for use. Bees wax used as emulsifier, liquid paraffin as lubricant ,borax used as alkalizing agent, methyl Paraben used as preservative ,rose oil used as fragrance The evaluation results confirmed that the antiseptic cream remained physically stable; the physicochemical evaluation results confirm that the color and odor of present herbal formulation is acceptable with a pleasant odor and better after effects, acceptable pH, good spredability, wash ability and showed no skin irritation, phase separation. The findings support the use of herbal antiseptic cream as a cost effective, natural, and safer alternative to chemically formulated commercial antiseptic cream that may cause side effects such as staining, irritation, or taste alteration. Thus, the study concludes that herbal antiseptic cream can be an effective natural skin care product, especially for individuals seeking chemical - free options.

INTRODUCTION

Topical drug administration is a method of localized drug delivery that can occur anywhere in the body via topical, vaginal, or ocular channels. The primary channel of topical medication delivery is the skin, which is also one of the most accessible organs on the human body for topical administration. Topical preparations can have a systemic, local, or superficial effect on the skin. The benefits of topical drug delivery are widely acknowledged. These formulations, which deliver the drug via the skin to achieve systemic therapeutic effect, avoid the problems associated with first-pass metabolism because systemic

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circulation is achieved without being impacted by the phenomenon of the first pass effect. Topical drug delivery also allows for a controlled transfer of a drug with minimal side effects, good efficiency, and maintenance of a therapeutic dose throughout topical administration. Topical medication administration. Among other pharmaceutical dosage forms, topical drug delivery systems include solid powders, semisolids, liquid formulations, and sprays. The most popular semisolid formulations for topical drug administration are gels, creams, and ointments. Human Epidermis: The largest organ in the body is the skin. The whole body is covered. It acts as a barrier to keep out heat, light, damage, and infections. The skin also serves as a barrier between the body and its surroundings, controls body temperature, stores fat and water, and is a sensory organ.

Topical drug administration is a localized drug delivery system anywhere in the body through skin, vaginal, ophthalmic as topical routes. Skin is one of the most readily accessible organs on human body for topical administration and is main route of topical drug delivery system. Topical preparation are applied to the skin for surface, local or systemic effect.

Topical drug delivery is well recognized, as it allows a controlled transfer of a drug with minimum side effects, good efficiency and maintenance of a therapeutic dose throughout topical administration and these formulations. Which delivery the drug via the skin to achieve systemic therapeutic effect, avoid the challenges associated with first-pass effect.

Topical drug delivery system includes solid powders, semisolids, liquid preparations and sprays among other pharmaceutical dosage form. Gels, creams and ointments are the most often used semisolid preparations for topical medication delivery

Cream is defined as semisolid emulsions which are oil in water (o/w) or water in oil (w/o) type and these semisolid emulsions are intended for external application. Cream is classified as oil in water and water in oil emulsion. It is applied on outer part or superficial part of the skin and its main ability is to remain for a longer period of time at the site of application.

We have used neem oil as a main ingredient in our preparation which have the strong anti-septic, anti-fungal,anti-bacterial, anti-inflammatory properties and it is also used to reduce scar, pigmentation,wounds,redness and itching of the skin. The other ingredients include honey which gives the good antibacterial as well as soothing effect to the skin. We also use the other ingredient such as olive oil, bees wax, borax, liquid paraffin, rose water. The olive oil reach source of vitamin E and it is helpful to moisture and soften the skin. Bees wax used as a emulsifying agent and rose water used as a flavoring agent.

Advantages:

- Prevents minor skin infections
- Promotes faster healing of cuts and wounds
- Reduces pain, redness, and inflammation
- Soothes irritated skin
- Moisturizes dry and damaged skin
- Contains natural herbal ingredients
- Gentle and suitable for sensitive skin
- Helpful for burns, rashes, and insect bites

Disadvantages:

- Less scientific evidence
- Slower or weaker antimicrobial action
- Risk of allergic reactions
- Inconsistent product quality

- Shorter shelf life
- May delay proper medical treatment
- Possible drug interactions
- Strong smell or staining
- Not suitable for severe wounds
- Risk of contamination

Ideal characteristics of antiseptic cream

1. Broad-Spectrum Antimicrobial Activity

The cream should effectively inhibit or kill a wide range of microorganisms such as bacteria, fungi, and some viruses responsible for skin infections and wound contamination. Herbal ingredients like neem, turmeric, tea tree oil, tulsi, and aloe vera are commonly used for this purpose.

2. Skin-Compatible pH :

An ideal herbal antiseptic cream should have a pH close to normal skin pH (approximately 4.5–7.0). This helps:

- Maintain skin barrier function
- Prevent irritation
- Improve antimicrobial action
- Many studies reported acceptable pH values around 5–6.5 for herbal cream.

3. Good Spreadability

The cream should spread easily on the skin with minimal friction to ensure:

- Uniform application
- Better patient compliance
- Efficient drug distribution
- Good spreadability is an important evaluation parameter in herbal cream formulations.

4. Proper Consistency and Homogeneity

An ideal cream should be:

- Smooth
- Homogeneous
- Free from lumps or grittiness
- in appearance
- Uniform consistency ensures even distribution of active herbal ingredients.

5.Moisturizing and Wound-Healing Properties

Besides antiseptic action, the cream should support:

- Skin hydration
- Tissue repair
- Reduction of inflammation
- Ingredients like aloe vera, coconut oil, and vitamin E are frequently included for these purposes

List of equipment and glassware

Table No.1 List of equipment and glassware

Sr no	equipment and glassware
1.	Digital pH-Meter
2.	Digital Balance
3.	Stability Chamber
4.	Autoclave
5.	Incubator
6.	Hot air oven
7.	Soxhlet apparatus

Material and method

Preparation of extract

Leaves of *Murarayа Koenigii* were collected, shade dried at room temperature and ground in a manual mill and sieved with 2 mm copper sieve to form uniform powder. 50 g of dried powdered drug was weighed and filled in the thimble of Soxhlet apparatus. After that the thimble was fixed with the round bottom flask, and the assembly was attached to the condenser. And the paraffin wax was put at the joints of the assembly for the easy removal of the assembly at the completion of the extraction procedure. Then the solvent for extraction (ethanol) was filled. For extraction temperature should maintain 50^0c. Extraction was carried out until discoloration of solvents.

After completion of the extraction procedure the extract was filtered using Whattman filter paper and then concentrated at 45°C.The product was collected and shade dried for 10 day and extract was powdered Dried extracts were stored in well closed container at 20°C until further test were carried out.

Percentage yield of latex: Percentage yield of extract was calculated by dividing the Weight of extract by the Weight of the leaf powder taken for extraction.

$$\text{Percentage yield} = \frac{Weight\ of\ extract\ (g)}{Weight\ of\ powder\ (g)} \times 100$$

Figure 1. ***Murarayа Koenigii plant***

Figure.2. Powder of ***Murarayа Koenigii***

Figure.3. Extraction ***Murarayа Koenigii*** **leaves**

Formulation

Table No.2 Formulation

Sr.No	Ingredients % w/v	Category
1	Muraraya Koenigii	Antiseptic
2	Beeswax	Emulsifier
3	Liquid Paraffin	Lubricant
4	Borax	Alkaline agent
5	Mythyl Paraben	preservative
6	Rose Oil	fragrance
7	Distilled Water	vehicle

Optimized Formulation batch

Figure.4. Optimized Formulation batch

Evaluation parameter

Evolution of herbal toothpaste was done according to "Bureau of Indian standards" and these tests were performed for all herbal toothpaste formulation. This test includes.

1. Physical Examination

All these physical parameters of the formulation were checked visually-

A. **Colour**: The colour of the formulations was checked out against white & black backgrounds.
B. **Odour**: The odour of the formulation was checked by taking smell.
C. **Taste:** Taste was checked manually by tasting the formulation.
D. **Smoothness:** smoothness was tested by rubbing the paste formulation between the fingers.

2. pH

Weigh 1g of cream. Dissolve it in 10 mL of distilled water in a beaker. Stir well to form a uniform dispersion. Calibrate the digital pH meter with standard buffers (pH 4 and 7). Dip the electrode into the sample and record the pH.

Figure 5.Digital ph meter

3. Spredability Test

Weigh 1g of cream and place it between two clean glass slides. Place a 500g weight on the upper slide for 1 minute. Remove the weight and measure the diameter of the spread cream using a ruler or calliper.

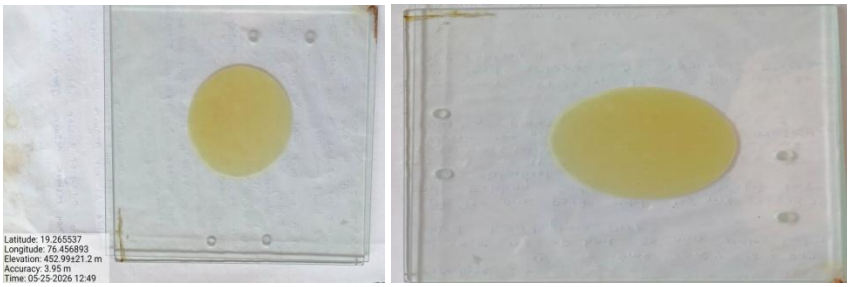

Figure.6 . Spredability Test

4. Wash ability Test

Apply a small amount (0.5g) of cream on the back of the hand or a test tile. Allow it to remain for 5 minutes. Rinse under running tap water without soap. Observe whether the cream is washed off easily or leaves a greasy/sticky residue

5. Skin Irritation Test

Clean a small area (2x2 cm) on the inner forearm or behind the ear with alcohol. Apply a thin layer (0.5g) of cream. Cover with a gauze or patch. Leave for 24 hours and then inspect. Check again at 48 hours for redness, itching, swelling, or rashes.

6. Phase separation:

Prepared cream was kept in a closed container at a temperature of 25-100 ℃ away from light. Then phase separation was checked for 24 h for 30 d. Any change in the phase separation was observed/checked.

7. Stability study [18, 19]: The purpose of Stability study of herbal cream formulation was to provide the evidence of quality of product varies with time

under the influence of temperature factors such as temperature, humidity, light.

The prepared herbal cream formulation were packed in air tight container at three different temperature ,humidity conditions i.e. Refrigerator condition $4^0 \pm 2^0$C Room temperature 25 ± 2^0C/ 60% ± 5%RH, and oven 40 ± 2^0C/ 75% ± 5%RH. The sample were withdrawn at different time interval over a period of one month & evaluate the test of Physical appearance i. e colour, odour, appearance, other was pH, Homogeneity, Spread ability, extrudability.

RESULT

Pharmacognostic characterization of plant

Table.no.3 Pharmacognostic characterization of plant

Sr.No.	Part of plant	Description
1	Leaves	Dark greenish –green
2	Flower	White
3	Fruit	Green. Red , Yellow
4	Stem & Bark	Green

Percentage yield of extract

Table.no. 4.Percentage yield of extract

Sr. No	Raw powder	Solvent	Extract quantity	% Yield
1	100 gm	Petroleum ether	24 g	24%
2		Ethanol	20 g	20%
3		Methanol	25 g	25%

Organoleptic Characteristic of extract

Table.no.5. Organoleptic Characteristic of extract

Sr. No	Parameter	Observation of Extract
		ET
1	Physical Appearance	Sticky mass
2	Colour	Greenish black
3	Odour	Characteristic
4	Taste	Slightly bitter

Antibacterial Activity of Extract

Table.no.6. Antibacterial Activity of Extract

Sample	Zone of Inhibition(mm)
	E.coli
Methanolic Extract	19
Ethanolic Extract	17

Organoleptic Characterization of Antiseptic Cream

Table.no.7. Organoleptic Characterization of Antiseptic Cream

Sr. No.	Formulation code	Colour	Appearance	Odour	Taste
1	F1	Greenish Brown	Smooth	Characteristic	Characteristic
2	F2	Greenish Brown	Smooth	Characteristic	Characteristic
3	F3	Greenish Brown	Smooth	Characteristic	Characteristic
4	F4	Greenish Brown	Smooth	Characteristic	Characteristic
5	F5	Greenish Brown	smooth	Characteristic	Characteristic

pH of Antiseptic Cream formulation

Table.no.8 pH of Antiseptic Cream formulation

Sr.No	Formulation code	pH
1	F1	5.3
2	F2	5.6
3	F3	5.1

4	F4	5.5
5	F5	5.8

Spredability of Antiseptic Cream Formulation

Table.no.9.Spredability of Antiseptic Cream Formulation

Sr. No	Formulation code	Spredability(cm)
1	F1	8.5
2	F2	8.2
3	F3	8.8
4	F4	9.1
5	F5	8.6

Wash ability of Antiseptic Cream Formulation

Table.no.10. Wash ability of Antiseptic Cream Formulation

Sr. No	Formulation code	Wash ability
1	F1	Easily washable
2	F2	Easily washable
3	F3	Easily washable
4	F4	Easily washable
5	F5	Easily washable

Skin irritation test

Table.no.11. Skin irritation test

Sr. No	Formulation code	Skin Irritation
1	F1	No Irritation
2	F2	No Irritation

3	F3	No Irritation
4	F4	No Irritation
5	F5	No Irritation

phase separation

Table.no.12. phase separation

Sr. No	Formulation code	phase separation
1	F1	No phase separation
2	F2	No phase separation
3	F3	No phase separation
4	F4	No phase separation
5	F5	No phase separation

RESULT OF OPTIMIZED FORMULATION

Table No.13 Result of optimized formulation

Test	F1	F2	F3	F4	F5
Colour	Greenish Brown	Greenish Brown	Greenish Brown	Greenish Brown	Greenish Brown
Odour	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic
pH	5.3	5.6	5.1	5.5	5.8
Spredability Test	8.5	8.2	8.8	9.1	8.6
Washability Test	Easily washable	Easily washable	Easily washable	Easily washable	Easily washable
Skin irritation Test	No irritation	No irritation	No irritation	No irritation	No irritation
Phase separation	No Phase separation	No Phase separation	No Phase separation	No Phase separation	No Phase separation

Stability studies

Table No1.4 Stability studies Result

Parameter	Initial	After 30 days
Colour	Greenish Brown	No change
Odour	Pleasant	No change
Ph	5.5	5.8
Texture	Smooth	smooth

Antibacterial Activity

The antibacterial activity of all the extracts were recorded as zone of inhibition in mm given in Table 8.5

Table 1.5: Antibacterial Activity of Extract

Sample	Zone of Inhibition(mm)	
	E.coli	S.aureus
Methanolic Extract	19	16
Ethanolic Extract	17	15

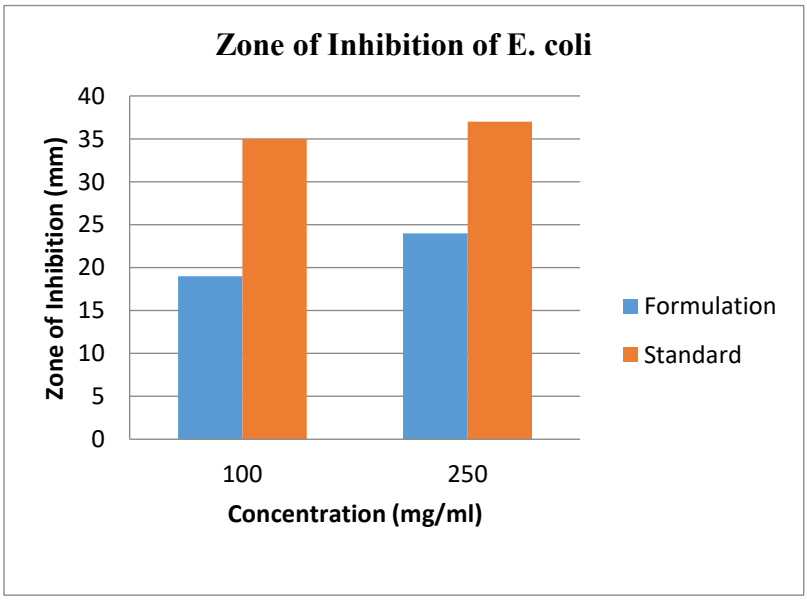

Figure 7: Graph of Antibacterial activity Of herbal mouth wash

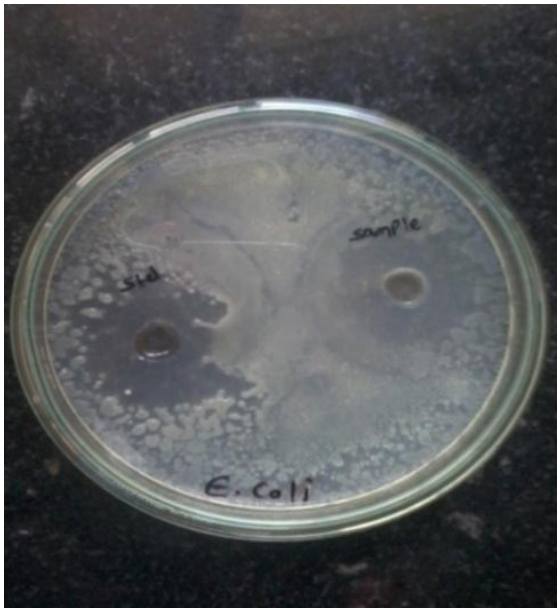

Figure 8. Zone of Inhibition of E .Coli

CONCLUSION:

Herbal antiseptic cream is a multiuse antiseptic cream that treats all skin infection. The natural antiseptic cream was effective and potential antimicrobial agent. It is used as a preventive, curative and healing. Herbal cream useful for dry skin, cuts, scratches, minor burns, wounds, cold sores and chapped skin. The study suggests that the composition and the base of the cream are more stable and safe for use.

The evaluation results confirmed that the antiseptic cream remained physically stable; the physicochemical evaluation results confirm that the color and odor of present herbal formulation is acceptable with a pleasant odor and better after effects, acceptable pH, good spredability, wash ability and showed no skin irritation, phase separation. The findings support the use of herbal antiseptic cream as a cost effective, natural, and safer alternative to chemically formulated commercial antiseptic cream that may cause side effects such as staining, irritation, or taste alteration.

Thus, the study concludes that herbal antiseptic cream can be an effective natural skin care product, especially for individuals seeking chemical -free options.

CONCLUSION:

As per above result of herbal antiseptic cream we comes to the conclusion that the use of herbal cream of murraya koenigii is suitable for wound healing. as per the result and discussion in table no. 03 : formulation of the cream ,the F4 is comparatively good formulation then the others.

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