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FORMULATION AND EVALUATION OF HERBAL ANTISEPTIC CREAM FROM *DRACAENA TRIFASCIATA* EXTRACT

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ABSTRACT:

Snake plant is the common name for Dracaena trifasciata. It has therapeutic qualities in addition to being an air-purifying and decorative plant, which makes it a viable option for the creation of new natural medications. Because pathogenic bacteria like Staphylococcus aureus are becoming more resistant, there is a greater need for natural antibacterial agents. Skin infections have traditionally been treated with traditional herbal medicines; dracaena trifasciata has emerged as a viable choice because of its purported anti-inflammatory, antibacterial, antioxidant, and wound-healing qualities. This study uses an extract. To maximize stability, texture, and therapeutic efficacy, a blend of Dracaena trifasciata extract and suitable ingredients was used to create the cream formulation.The formulated cream was subjected to various physiochemical , rheological, and The cream's steady pH, viscosity, spreadability, and consistency were determined by physiochemical examination. Easy application and skin spreadability were indicated by rheological investigations. Additionally, prepared cream significantly inhibited bacteria in in vitro antimicrobial testing. According to reports, the formulation's extract offers a number of biological qualities, such as antibacterial, antioxidant, anti-inflammatory, and wound-healing capabilities.

KEYWORDS : antiseptic , herbal cream, *Dracaena trifasciata* extract, Formulation, Evaluation, etc.

INTRODUCTION:

Transdermal and dermal drug delivery systems offer promising alternatives to traditional methods of drug administration. When applied topically, drugs can produce either local or systemic effects, depending on their formulation and absorption characteristics. The effectiveness of a topical dermatological formulation hinges on the drug's ability to be efficiently absorbed by the target site—typically the skin itself. For optimal therapeutic outcomes with minimal systemic side effects, the drug must reach the targeted area at an appropriate concentration. However, the skin's natural barrier properties present significant challenges to the permeation of active compounds, resulting in limited absorption. [1–4] In response, pharmaceutical companies are increasingly investing in the development of innovative formulations designed to overcome the skin's inherent barrier functions. The skin, much like the brain, is a complex organ composed of diverse cell types, and although it is easily accessible for research and drug delivery, the exact mechanisms by which substances infiltrate the skin remain only partially understood. Therefore, ongoing research is essential to elucidate the precise pathways of transdermal drug absorption and to determine how formulation strategies can enhance this process. Advancements in modern technology—such as parallel synthesis and combinatorial chemistry—have enabled the rapid development of a wide array of potential drug candidates. [5]. Skin disorders significantly impair quality of life due to the emotional and social stigma they carry. A key factor in skin health is the skin microbiota, a complex community of commensal bacteria that contributes to immune regulation and serves as a frontline defense against pathogenic organisms. Disruption in the balance of this microbial ecosystem can predispose individuals to various skin conditions. Conventional treatments—including antibiotics, retinoic acids, and corticosteroids—remain the mainstay of therapy but are often associated with challenges such as antibiotic resistance and undesirable side effects. In response, probiotic and postbiotic-derived bioactives are emerging as promising alternatives for topical application, offering therapeutic benefits with a lower risk of adverse reactions. [6,7]. Additionally, plant-derived extracts and essential oils are being investigated for their antimicrobial, non-phytotoxic, and anti-dermatophyte properties, presenting valuable opportunities for pharmaceutical development. Nevertheless, much remains

unknown about the precise roles and interactions of the skin microbiome, underscoring the urgent need for continued research and the development of novel therapeutic strategies.[8].

In traditional medicine, the leaves and rhizomes of this plant are used to treat various conditions such as bronchitis, asthma, coughs, snake bites, insect bites, and also utilized to address inflammation, respiratory infections, and as a hair tonic [9]. The roots and leaves contain saponins as secondary metabolites, which are known for their healing properties in treating coughs, snake bites, sprains, bruises, boils, abscesses, respiratory inflammation, and hair-related conditions.

This herb has demonstrated anti-diabetic, anti-allergic, anaphylactic, and thrombolytic properties. Leaf extracts have shown antibacterial activity against Escherichia coli and Staphylococcus aureus.[10]. Recent research has also indicated that the leaves possess anti-alopecia activity. [11]. Phytoconstituents found in the plant include flavonoids, saponin steroids such as 25S-ruscogenin and sansevierigenin, pregnancy glycosides, and steroidal saponins. Other compounds identified in this plant include methyl gallate, methyl pyrophaeophorbide A, oliveramine, (2S)-3',4'-methylenedioxy-5,7-dimethoxyflavan, 1-acetyl-β-carboline, digiprolactone, and tricosanoic acid. [12]

Advantages of Herbal Antiseptic cream:

i. Antimicrobial activity
ii. Wound Healing effect
iii. Anti-inflammamtory
iv. Analgeic Effects
v. Natural source
vi. Availability
vii. Cost effective
viii. Cultural and Traditional Use

MATERIALS AND METHODS

Collection, identification and processing of plant:

The *Dracaena trifasciata* plant extract were collected from Amolak Botanical garden, Kada, Beed, Maharashtra. The botanical identification and authentication of the plant material were conducted by Ms Lad Madam SAJVPM's College of Pharmaceutical science and research centre, Kada, Lad Ashti, Beed, Maharashtra, India.

Dracaena trifasciata

Dracaena trifasciata (Prain) Mabb., synonymously known as Sansevieria trifasciata Prain, is a perennial herbaceous plant belonging to the family Asparagaceae. [13]. The plant contains various phytoconstituents, including flavonoids, steroidal sapogenins such as 25S-rusogenin and sansevierigenin, pregnane glycosides, and steroidal saponins. Other identified compounds include methyl pyrophaeophorbide A, oliveramine, dimethoxyflavane, digiprolactone, trichosanic acid, and methyl gallate.[14]. Dracaena species have been widely used in traditional medicine across various cultures for thousands of years, serving as effective remedies for conditions such as hemorrhage, dysentery, diarrhea, gastric and external ulcers, wounds, leucorrhea, bone fractures, piles, diabetes, and even tumors.[15].

Fig. *Dracaena trifasciata* plant

Chemical constituents -

1. Saponin
2. Alkaloids
3. Flavonoids
4. Terpenoids
5. Steroids
6. Phenolic Compounds
7. Organic Acids

Medicinal Uses:

1. Antimicrobial acitivity
2. Antioxidant activity
3. Anti-inflammatory activity
4. Antifungal activity
5. Anti- Cancer acitivity.

EXCEPIENT:

Steric acid

Stearic acid is a long-chain carboxylic acid in terms of its chemical structure. A straight-chain hydrocarbon with 18 carbon atoms joined to a carboxyl group (COOH) at one end makes up its chemical structure.

Physical Characteristics:

At room temperature, stearic acid has the appearance of a white, waxy solid. **Melting Point:** It is helpful in a variety of applications due to its comparatively high melting point, which is approximately 69–71°C (156–160°F).

Solubility: Stearic acid is soluble in organic solvents such as ethanol, ether, and chloroform but insoluble in water.

Occurrence: A variety of vegetable and animal fats and oils naturally contain stearic acid.

Industrial Production: Fats and oils can be hydrolyzed to create stearic acid. It is frequently made from vegetable oils like soybean, coconut, or palm oil. The oil is first saponified to create soap, and then the fatty acids are separated by acidification. After that, stearic acid is refined using techniques like crystallization and distillation.

Uses:

• **Cosmetics and Personal Care:** Stearic acid is frequently utilized as an emulsifier, thickening agent, and emollient in cosmetics and personal care products. It gives lotions, creams, and soaps a smooth, creamy texture and aids in stabilizing emulsions.

• **Pharmaceuticals:** A variety of pharmaceutical formulations, such as ointments, creams, and suppositories, are made with it. • Candles: To improve burn time and durability, stearic acid is frequently added to candle wax.

• **Food business:** Stearic acid and its salts are utilized in the food business to thicken, stabilize, and emulsify a variety of food products.

• **Rubber and Plastics Industry:** It is utilized as a release agent and lubricant in the manufacturing of rubber, plastics, and other materials.

• **Textile Industry:** Stearic acid is utilized in the textile industry to soften and lubricate textiles and yarns during the production process.

Safety: When used properly, stearic acid is usually regarded as safe for use in food, medicine, and cosmetics. It doesn't cause skin irritation or toxicity. It should be handled carefully, though, as any chemical, and excessive exposure might irritate skin.

Fig.4: Steric acid

Beeswax:

Beeswax is a natural wax produced by Honeybees (*Apis mellifera*) it is complex mixture of complex mixture of esters, fatty acids, and hydrocarbons, that serves various purposes industries ranging from cosmetics to pharmaceuticals.

Composition: Beeswax primarily consist of Esters of fatty acids and long-chain alcohols (~70–80%), Free fatty acids (~10–15%), Hydrocarbons (~10–15%). It Also contains small amount of Aromatic substances, propolis, pollen residues.

Physical Properties

Appearance: Yellow to light brown (natural); white (bleached)

Odor: Mild, honey-like scent

Texture: Solid at room temperature; softens when warm

Melting Point: ~62–64°C (144–147°F)

Density: ~0.96 g/cm³

Solubility: Insoluble in water; soluble in hot alcohol, oils, and some organic solvent

Applications

- Cosmetics and Skincare: Emollient, thickener, and stabilizer in balms, lotions, lipsticks
- Pharmaceuticals: Base for ointments and salves
- Food Industry: Coating for cheese, glazing agent (E901)
- Candle Making: High-quality, slow-burning candles
- Polishes and Waxes: For wood, leather, and metal
- Crafts and Art: Batik dyeing, modeling, encaustic painting
- Industrial: Lubricants, waterproofing agents

Safety: Beeswax is non-toxic, non-irritating, and non-comedogenic and suitable for sensitive, dry, or irritated skin. It forms a breathable, protective barrier without suffocating the skin**.** Natural beeswax is usually well tolerated. In rare cases sensitivity may occur, especially if the wax contains residual pollen.

Fig. Beeswax

Glycerine:
Glycerine is also called glycerol. It is a colorless, odorless, sweet-tasting, and viscous liquid that is widely used in pharmaceuticals, cosmetics, food, and industrial applications.

Chemical structure: Glycerine has chemical formula $C_3H_8O_3$ and IUPAC Name Propane-1,2,3-triol. Its molecular structure consist of a three-carbon backbone (propane), Each carbon atom is bonded to a hydroxyl group (-OH).

Synthesis of Glycerine: Glycerine is naturally synthesized by Saponification of fats and oils (triglycerides) with a strong base like NaOH or KOH produces soap and glycerol and the Modern industrial source of Glycerine is biodiesel production also generates glycerol as a byproduct during transesterification of triglycerides with methanol.

Physical properties:

Appearance: Colorless, transparent, viscous liquid.

Odor: Odorless or mildly sweet

Taste: Sweet (non-toxic).

Viscosity: Highly viscous.

Melting Point: 18°C (64°F).

Uses:

- Pharmaceuticals: As a laxative, moisturizer, or solvent
- Cosmetics: Humectant in lotions, creams, and soaps
- Food Industry: Sweetener and humectant (E422)
- Industrial: Antifreeze, plasticizer, and in the manufacture of explosives (e.g., nitroglycerin)

Safety: glycerine is non-toxic, biodegradable, and generally recognized as safe (GRAS) by regulatory authorities like the FDA.

Fig. Glycerine

Coconut oil:

Biological source: coconut oil is obtained from fruit of plant *Cocus nucifera* belonging to Family Arecaceae.

Part Used: Dried coconut kernel (copra)

Type: Fixed oil (non-volatile)

Physical properties

Appearance: White solid at room temp, clear oil above ~25°C

Odor: Mild, characteristic coconut scent

Melting Point: ~24–26°C

Density: ~0.92 g/cm³ at 30°C

Solubility: Insoluble in water, soluble in organic solvents.

Uses:

- Emollient: Softens and smooths the skin by forming a protective barrier to prevent moisture loss.
- Base oil: Acts as a carrier or base oil in oil-in-water or water-in-oil emulsions.
- Natural preservative: Lauric acid in coconut oil offers mild antimicrobial activity, helping to extend shelf life.
- Stabilizer: Enhances the consistency and spreadability of creams.

Safety: Coconut oil generally considered safe for use in cosmetics and it is well tolerated, especially in Natural Formulations.

Fig. Coconut oil

Vitamin E Oil:

Vitamin E is a lipophilic antioxidant that scavenges free radicals and protects cell membranes from oxidative damage. In topical use, it helps prevent UV-induced skin damage and enhances wound healing.

Chemical name : Tocopherol / Tocopheryl Acetate.

Category:

Therapeutic class: Antioxidant, Dermatological agent

Pharmacological class: Fat-soluble vitamin

Physical properties:

Appearance:

Color: Clear to pale yellow or light amber

Form: Viscous, oily liquid

Odor: Odorless or faint characteristic odor

Taste: Mild, slightly bitter or tasteless

Solubility: It is soluble in Fats and oils, organic solvents like ethanol and chloroform and insoluble in water.

Uses:

- Antioxidant: Prevents oxidation of oils and fats in the cream, increasing product shelf life. Protects skin cells from free radical damage (e.g., UV radiation, pollution)
- Healing and Anti-inflammatory Effects Promotes wound healing and reduces inflammation. Used in scar treatment and creams for minor burns, eczema, and dermatitis.
- Helps calm irritated or sensitive skin.Often included in after-sun or post-procedure creams (like laser or peel recovery products).

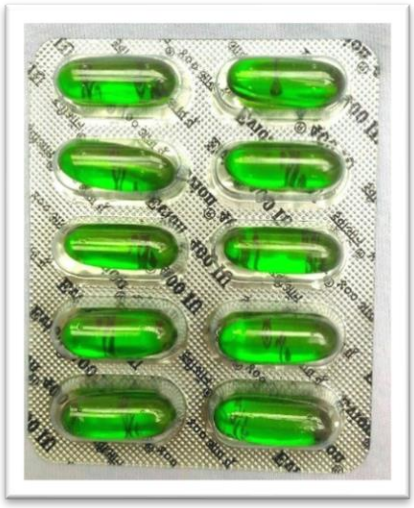

Fig. Vitamin E Oil

Neem oil :

Common Name: Neem Oil

Botanical Source: Neem consists of almost all part of the plant which are used as drug of *Azadirachta indica* belonging to family Meliaceae.

Part Used: Seeds (cold-pressed or solvent-extracted oil)

Type: Herbal oil (used in traditional and modern medicine)

Uses:

- Cosmetic products: Creams, lotions, hair oils, soaps (as a natural alternative to parabens or synthetic preservatives)
- Topical pharmaceuticals: Ointments or gels with herbal actives.
- Traditional medicines: Used in Ayurvedic and herbal preparations to improve stability.
- Agriculture/food packaging (experimental): In bio-based antimicrobial coatings for grains or seeds
- **Safety:** Neem oil has shown potential as a natural preservative due to its antibacterial, antifungal, and antioxidant properties, but it has less standard than synthetic preservatives.

Fig. Neem oil

Methyl Paraben

The food, pharmaceutical, and cosmetic industries all frequently utilize methyl paraben as a preservative. It is a member of the class of compounds called parabens, which are para-hydroxybenzoic acid esters. In particular, the methyl ester of para-hydroxybenzoic acid is methyl paraben.

Chemical Structure: The IUPAC name for methyl paraben is methyl 4-hydroxybenzoate, and its chemical formula is C8H8O3. A para-hydroxybenzoic acid molecule with a methyl group (-CH3) joined to an ester functional group (-COO) makes up its chemical structure.

Synthesis: In the presence of an acid catalyst, methyl paraben is usually produced by the esterification reaction of methanol with para-hydroxybenzoic acid.

Physical Characteristics:

Appearance: Methyl paraben typically takes the form of colorless crystals or a white crystalline powder.

Odor: It has no smell or a slight one.

Solubility: Methyl paraben has a weak solubility in water but is soluble in ether, alcohol, and other organic solvents.

Preservative Properties:

Methyl paraben is frequently used as a preservative in food, medicine, cosmetics, and personal care items. It prolongs the shelf life of items and keeps them from spoiling by interfering with the cellular processes and metabolism of bacteria, yeast, and mold. Methyl paraben works well with many different formulations and across a broad pH range.

Applications include:

• Personal care and cosmetics.

• Safety in the Food Industry.

• Pharmaceuticals Things to think about: The safety of methyl paraben has been thoroughly investigated, and regulatory bodies like the European Food Safety Authority (EFSA) and the U.S. Food and Drug Administration (FDA) have declared it generally recognized as safe (GRAS) for use in food and cosmetic products.

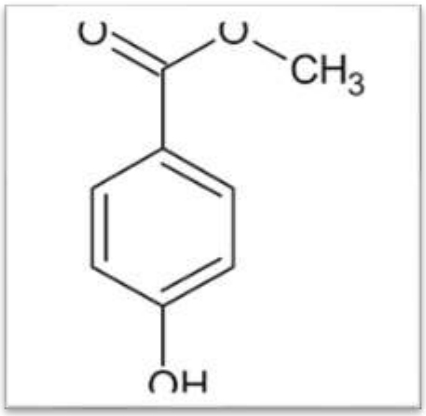

Fig. 9: Methyl paraben and Structure of methyl paraben

Water

Water is a key ingredient in many cream formulations, serving as a solvent, diluent, and vehicle for active ingredients. Creams are semisolid emulsions consisting of water and oil phases stabilized by emulsifiers.

METHOD OF PREPARARTION

i. Collection of extract : The extract was obtained using soxhlet extraction process.
ii. D. trifasciata extract cream: Made with a base of oil in water (O/W) according to methods Muntiahetal Formulation.
iii. Accurately weight all the ingredients and prepared the two phase first is oil phase and second in water phase.
In oil phase take steric acid, Beeswax, coconut oil ,Neem oil, Vitamin E oil. add all ingredients in beaker for melting.
iv. Water phase included methyl paraben, Glycerine, Rose water and Distilled water. added all ingredients in beaker for melting.
v. Then added water phase in oil phase and also added *Dracaena trifasciata* extract with continuous stirring until cooling of emulsifier in china dish.
vi. Prepared the cream and store in container and performed evaluation test.

FORMULATION TABLE:

Table 1: Formulation table of *Dracaena trifasciata* Cream

Ingredient	**F1**	**F2**	**F3**
Beeswax	3 gm	3.5 gm	3 gm
Emulsifying wax	2.5 gm	2.5 gm	3 gm
Coconut oil	2 ml	2.5 ml	2.5 ml
Neem oil	2 ml	2 ml	1.5 ml
Vitamin E Oil	1 ml	1 ml	1 ml
Dracaena trifasciata extract	5 ml	4 ml	5 ml
Methyl paraben	0.04 gm	0.02 gm	0.06 gm
Distilled water	4 ml	4 ml	4 ml
Glycerine	Q.S.	Q.S.	Q.S.
Rose water	Q.S.	Q.S.	Q.S.

Formulation of Herbal antiseptic cream:

The extract of *dracaena trifasciata* has been used in traditional medicine to alleviate various conditions. It has been reported that this extract has several biological activities such as antibacterial, antioxidant, anti-inflammatory, wound healing.

a) Accurately weighing of following ingredients :

i. Coconut oil
ii. Beeswax
iii. Emulsifying wax
iv. Neem oil
v. Methyl Paraben
vi. Distilled water
vii. Glycerine
viii. Ethanolic extract of *Dracaena trifasciata*
ix. Vitamin E oil
x. Rose water

Fig. 11: Weighing of ingredients.

Procedure:

1. Oil Phase Preparation: In a borosilicate glass beaker, combine coconut oil, beeswax, emulsifying wax, and neem oil, Heat the mixture to 75°C and maintain this temperature to ensure all components are fully melted and homogenous.
2. Aqueous Phase Preparation: In a separate beaker, dissolve methyl paraben in distilled water. Add glycerine to the solution, Heat this aqueous mixture to 75°C until the methyl paraben is completely dissolved, forming a clear solution.
3. Emulsion Formation : In a mortar and pestle, slowly add the hot aqueous phase to the hot oil phase while continuously stirring to form a water-in-oil (w/o) emulsion.
4. Addition of Active Ingredients: Add the Ehanolic extract of *Dracaena trifasciata* vitamin E oil, and rose water to the emulsion. Stir vigorously until a smooth cream is formed.

Fig. 12: Preparation of oil phase and water phase.

5. Prepared formulation: Prepared the cream stored in the container and performed evaluation tests.

Performance of evaluation tests:

Phytochemical Screening
Phytochemical screening was conducted to qualitatively identify the presence of secondary metabolites in the 96% ethanol extract. The secondary metabolites tested include alkaloids, flavonoids, saponins, and tannins. The procedures for each test are as follows:

a. Flavonoid Test:

Approximately 0.5 grams of sap were dissolved in 2 mL of 96% ethanol, followed by the addition of 3 drops of sodium hydroxide (NaOH) solution. A yellow coloration upon addition of NaOH indicates the presence of flavonoid compounds.

b. Saponin Test:

About 0.5 grams of sap were dissolved in 20 mL of distilled water (aquades) and shaken vigorously. The formation of a stable foam layer approximately 1 cm in height indicates the presence of saponin compounds.

c. Tannin Test:

A total of 0.5 grams of sap were dissolved in 2 mL of 96% ethanol, then heated in 10 mL of distilled water in a test tube and filtered. To the filtrate, 3 drops of 0.1% ferric chloride ($FeCl_3$) solution were added. The appearance of a brownish-green or bluish-black coloration confirms the presence of tannins.

Evaluation Tests:

a. Physical Properties: The cream was observed and assessed based on the following parameters:

- **Color and Odor:** The cream exhibited a white color and a characteristic odor.
- **Appearance:** Evaluated based on color and surface texture. The cream was also graded for roughness.
- **After Feel:** Emolliency, slipperiness, and the amount of residue left after application of a fixed amount were assessed.
- **Type of Smear:** The type of film or smear formed on the skin after application was examined.
- **Ease of Removal:** Assessed by washing the applied area with tap water to determine how easily the cream could be removed.
- **Irritancy Test:** A 1 cm^2 area on the dorsal surface of the left hand was marked. The cream was applied to the area and monitored for signs of irritancy, erythema, or edema at regular intervals for up to 24 hours.
- **b. Organoleptic Test:**

This test involved sensory evaluation of the gel preparation, including: Color, Odour, and Texture. A good organoleptic gel should have a soft texture, with color and odour appropriate to the extract used.

c. pH Test:

The pH was measured by immersing the electrode of a pH meter into each gel sample previously dissolved in distilled water (aquadestilata). The reading was recorded once the display stabilized. Ideal pH for topical preparations ranges from 5.0 to 10.0, while gel preparations should match skin pH, ideally between 4.5 and 6.5.

d. Viscosity Test:

Viscosity was measured using a Brookfield Viscometer equipped with spindles No. 4 and 5, operated at 50 rpm. The spindle was immersed in the gel sample, and the reading was taken once the dial indicated a stable value.

e. Spreadability (Spread Power) Test:

This test evaluates how well the gel spreads on the skin: A 1-gram sample of the gel was placed at the center of a 20×20 cm glass plate. Another glass plate was placed over it, and a known weight (ballast) was applied. The spread diameter was measured to determine the gel's dispersion ability.

Phytochemical investigation:

A series of qualitative chemical tests was conducted to detect the presence of various phytochemical compounds within the sample. Each test utilized specific reagents that produce characteristic color changes or physical effects in the presence of certain secondary metabolites.

- In Saponin Test the sample was mixed with distilled water (Aquadest) and shaken vigorously. The formation of a stable foam indicated the presence of saponins, attributed to their natural surfactant properties.
- For the Tannin Test, the sample was dissolved in ethanol and treated with ferric chloride ($FeCl_3$) solution. A brownish-green coloration was observed, confirming the presence of tannins, which react with ferric ions to produce this distinctive color.
- For the Flavonoid Test, the sample was dissolved in ethanol, followed by the addition of sodium hydroxide (NaOH). The development of a yellow color indicated the presence of flavonoids, which exhibit this color change under alkaline conditions.
- In the alkaloids test, hydrochloric acid (HCl) was used to extract alkaloids into an acidic solution. Mayer's reagent was then added, resulting in the formation of a yellow precipitate. This confirms the presence of alkaloids, which react with Mayer's reagent—a solution of potassium mercuric iodide—to form a yellow or cream-colored precipitate.

Table 2: Phytochemical Investigation of *Dracaena trifasciata*

Sr. No	Test	Reagent	Inference	Result
1	Saponin test	Aquadest	Formed Foam (+)	Present
2	Tannin test	Ethanol + $FeCl_3$	Brownish green color (+)	Present

3	Flavoniods test	Ethanol+ NaOH	Yellow color (+)	Present
4	Alkaloid test	HCl+ Mayer Reagent	Yellow Precipitate(+)	Present

Phytochemical analysis of *Dracaena trifasciata* confirmed the presence of saponins, tannins, flavonoids, and alkaloids. Each compound was identified through characteristic reactions—such as color changes or precipitate formation—upon treatment with specific reagents.

Organoleptic Evaluation:

Table 3 presents the results of organoleptic tests conducted on *Dracaena trifasciata* cream formulations, evaluating sensory characteristics such as smell, phase, and color. All three formulations (F1, F2, and F3) exhibited a characteristic odor, indicating consistency in olfactory properties. In terms of phase, each formulation appeared semisolid, suggesting uniformity in texture and physical state. Additionally, all formulations displayed a white color, further confirming consistency in visual appearance. Overall, the organoleptic evaluation demonstrates that the cream preparations possess similar sensory attributes, reflecting a standardized and uniform formulation process.

Table 3. Organoleptic Evaluation of *Dracaena trifasciata*

Sr. No.	Test	F1	F2	F3
1	Smell	Characteristics smell	Characteristics smell	Characteristics smell
2	Phase	semisolid	semisolid	semisolid
3	Color	green	green	green

pH Test

Table 4 presents the pH values obtained from testing different Jatropha curcas cream formulations. Formulation F1 showed a pH of 6.1, while F2 and F3 recorded pH values of 6.9 and 6.7, respectively. These measurements are important as they reflect the acidity or alkalinity of the formulations. All values fall within a slightly acidic to neutral range, which is considered optimal for skincare products, as it aligns with the skin's natural pH and helps maintain its barrier function. Therefore, the pH values indicate that all formulations are suitable for topical application and are unlikely to cause irritation or discomfort.

Table 4. PH test of Dracaena trifasciata formulations

Cream Dosage Formulation	pH
F1	6.1
F2	6.4
F3	6.2

Spreadability Test:

Table 5 presents the results of a spreadability test conducted on three different cream formulations (F1, F2, and F3), evaluating their ability to spread under varying applied loads. The loads ranged from "Glass only" to "300 g," representing the increasing weight placed on the creams during testing. For each load level, spreadability was measured in millimeters. As the applied load increased, the spreadability of all formulations generally increased, indicating improved ease of spreading with greater pressure. The average spreadability values were 6.45 mm for F1, 6.62 mm for F2, and 7.12 mm for F3. Among the three, formulation F3 demonstrated the highest spreadability, suggesting superior application characteristics and better distribution on the skin surface.

Table 5. Spreadability test of *Dracaena trifasciata* formulations.

Load imposed	F1	F2	F3
Glass only	5.74	5.84	6.2
100 gr	6.11	6.43	6.81
200 gr	6.87	7.09	7.87
300 gr	7.11	7.12	7.89

Average	6.45	6.62	7.12

Viscosity Test

Table 6 presents the viscosity measurements of three cream formulations (F1, F2, and F3), evaluating their resistance to flow. The recorded viscosity values were 0.4 Pa for F1, 0.2 Pa for F2, and 0.3 Pa for F3. These values are key indicators of the creams' consistency and texture. Formulation F2, with the lowest viscosity, indicates a thinner consistency that may enhance spreadability and skin absorption. In contrast, F1 shows the highest viscosity, suggesting a thicker formulation that could provide better moisturizing and protective effects. F3 exhibits an intermediate viscosity, potentially offering a balanced texture suitable for both ease of application and skin nourishment. These results contribute to understanding the overall application characteristics and suitability of each formulation for different skincare needs.

Table 7: Viscosity of *Dracaena trifasciata* formulations

Formulation	Viscosity
F1	0.4 Pa. s
F2	0.2 Pa. s
F3	0.3 Pa s

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