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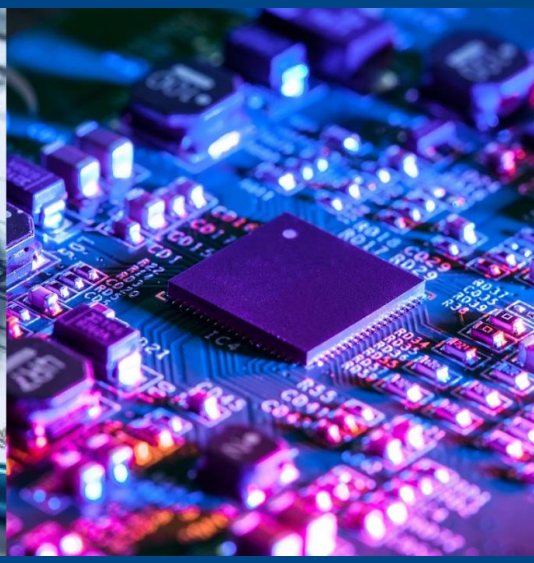

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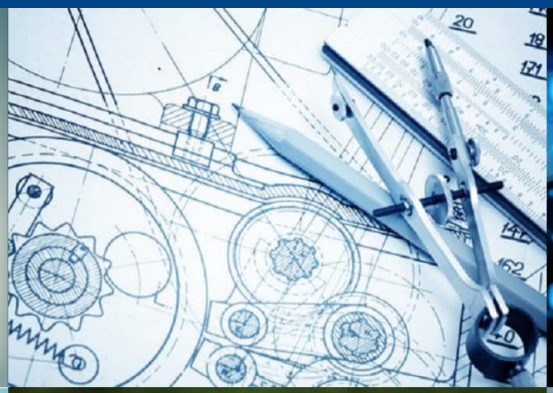

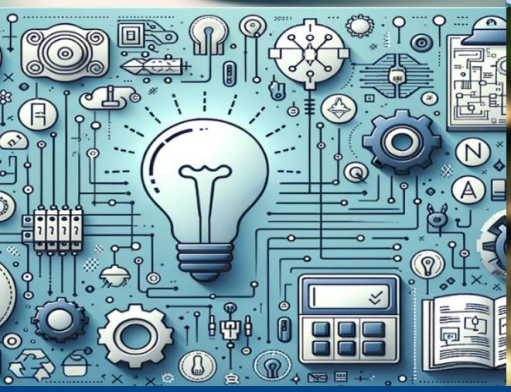

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Formulation and Evaluation of Polyherbal Antifungal Cream for the Treatment of Tinea Versicolor

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ABSTRACT: Tinea versicolor is a common superficial fungal infection caused by Malassezia species, leading to skin discoloration and scaling. Conventional antifungal treatments often have limitations such as side effects, recurrence, and resistance. This study explores the formulation and efficacy of a polyherbal antifungal cream containing medicinal plant extracts with known antifungal properties. The selected herbs-such as Ocimum sanctum (Holy Basil), Curcuma longa (Turmeric), Aloe vera were incorporated into a topical cream base. These herbs possess antimicrobial, anti-inflammatory, and skin-healing properties, enhancing the therapeutic potential against Malassezia. The formulated polyherbal cream was evaluated for its physicochemical properties, stability, and antifungal activity using in vitro and in vivo models. Results indicated significant antifungal efficacy, improved skin hydration, and reduced recurrence compared to conventional treatments. This study suggests that polyherbal formulations can serve as a natural, effective, and safer alternative for managing tinea versicolor.

KEYWORDS: Polyherbal formulation, antifungal cream, Malassezia, tinea versicolor, herbal medicine, skin infection.

Polyherbal Antifungal Cream

Polyherbal antifungal creams are topical formulations that combine the benefits of multiple plant- based ingredients, each with antifungal properties, to treat skin infections caused by fungi. These creams leverage the natural bioactive compounds found in herbs, which can help combat fungal growth, soothe inflammation, and promote faster healing. The use of multiple herbs in these formulations enhances their efficacy, as different plants may target various fungal species or contribute synergistically to improve the overall antifungal action. Some common herbs used in polyherbal antifungal creams include neem, tulsi, turmeric and aloe vera, all of which are known for their antifungal, antibacterial, and skin-healing properties.

Polyherbal antifungal creams are a natural alternative to synthetic antifungal treatments, offering a holistic approach to skin care while minimizing the risk of side effects commonly associated with chemical treatments. These creams are particularly popular in the management of conditions like athlete's foot, ringworm, and other dermatophyte-related infections, providing relief from itching, redness, and irritation. Such creams are generally easy to apply and well-tolerated, making them a preferred choice for individuals seeking gentle yet effective treatment for fungal infections.

I. INTRODUCTION

Tinea versicolor is a common fungal infection of the skin. The fungus interferes with the normal saturation of the skin, performing in small, discolored patches. These patches may be lighter or darker in color than the girding skin and utmost generally affect the back and shoulders. Tinea versicolor, which is also called pityriasis versicolor, isn't painful or contagious. But it can lead to emotional torture or tone- knowledge. Antifungal creams, poultices or soaps can help treat tinea versicolor. But indeed, after successful treatment, skin color may remain uneven for several weeks or months. Tinea versicolor frequently recurs, especially in warm, sticky rainfall. Tinea versicolor can affect all skin colors else.

The overgrowth of fungus causes small, round patches of skin to get either lighter or darker than the girding skin. It’s more common for your skin to get lighter. The spots can appear white, pink, red, brown, light tan or unheroic. On darker skin, tinea versicolor appears white or light tan. On lighter or paler skin, tinea versicolor looks light red or pink. Some patches or spots can come scaled and dry. Over time, the patches get larger and start to connect, covering larger areas of your skin. Skin abrasion, generally on your reverse, casket and tummy. Discolored patches can appear anywhere on your body and be tones of pink, unheroic, brown, tan or white. Itching at or around areas of skin affected by tinea versicolor. inordinate sweating. Patches of skin that may dry out and form scales. Patches of skin that don’t darken or tan in the sun.

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The incentive that causes tinea versicolor, Malassezia, grows on normal, healthy skin. But the following effects can spark an overgrowth that causes the infection unctuous skin, living in a hot climate, sweating a lot, Hormonal changes, a weakened vulnerable system because the incentive grows naturally on your skin, tinea versicolor isn't contagious. The condition can affect people of any skin color. It's more likely to affect teens and youthful grown-ups. For some people, it can beget emotional torture and passions of tone- knowledge.

II. MATERIALS AND METHODS

1. Plant material and Chemical used

(a) Tulsi, Turmeric, Aloe vera are taken from the local market.
(b) Cetyl alcohol, Petrolium jelly, Potassium hydroxide, Hard paraffin, Methyl paraben Propyl paraben, Rose water was taken from the college laboratory.

2. Method

2.1 Pre-formulation Study

(a) Test for Tannins: About 0.5 ml of the plant extract was boiled with 1 mL of distilled water and 2-3 drops of Ferric chloride was added to the Mixture; which was then observed for blue-black coloration indicating the presence of tannins.
(b) Test for Alkaloids: The plant extract was dissolved in 100 mL of water, filtered, and cooked in steam with 2 mL of the filtrate and three Drops of 1% HCl. Then, 1 mL of the heated mixture was combined with 6 mL of the Mayer-Wagner reagent. The Appearance of a cream or brown-red colored precipitate indicated the presence of alkaloids.
(c) Test for Saponins: About 0.5 milliliters of the extract and 5 mL of distilled water were combined and agitated. Then, the formation of foam Confirmed the presence of saponins.
(d) Test for Flavonoids and Glycosides: 200 mg of the plant extract was mixed with 10 mL of ethanol and filtrated.2 mL of the filtrate, concentrated HCl, and Magnesium ribbon were mixed. The formation of a pink or red color indicates the presence of flavonoids. Adding 1 mL of Distilled water and NaOH to 0.5 mL of crude extract, the formation of a yellowish color indicated the presence of glycosides.
(e) Test for Phenols: About 1 mL of the extract was combined with three drops of FeCl3, and 1 mL of K2Fe (CN6). The formation of greenishblue forms confirmed the presence of phenols.

2.2 Preparation of Polyherbal antifungal Cream

Take the Cetyl alcohol, Potassium hydroxide, Hard paraffin and Petrolium jelly in a Borosilicate glass beaker at 80°C and maintain that heating temperature (Oil Phase). In other beaker, dissolve Methyl paraben and Propyl paraben in distilled water by maintaining temperature 80°C with water Bath. Stir the solution with glass rod until all Solid particles gets dissolved (Aqueous Phase). Then gently add heated aqueous Phase in heated oily phase with continuous Stirring. After mixing both phases, immediately add all Extracts into it with continue mixing by glass Rod until it will form a cream. Then Cream was formulated having superb color i.e. Lemon yellow. When the cream is formed, then add Rose water as fragrance.

S.NO.	Ingredients	F1	F2	F3
1.	Tulsi extract	1ml	1ml	1ml
2.	Aloe-vera extract	0.67ml	0.28ml	0.9ml
3.	Turmeric extract	2ml	1.67ml	2.7ml

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4.	Cetyl alcohol	1.6gm	1.5gm	1.6gm
5.	Potassium hydroxide	3.5gm	2.5gm	1gm
6.	Petrolium jelly	6gm	4gm	3gm
7.	Hard paraffin	6gm	5gm	4gm
8.	Methyl paraben	1.2gm	1.2gm	1gm
9.	Propyl paraben	0.9gm	0.9gm	0.7gm
10.	Rose water	q.s.	q.s.	q.s.

Table 1. Formulation of Polyherbal Antifungal Cream

2.3 Evaluation of Polyherbal Antifungal Cream

1. Organoleptic property

The prepared antifungal cream will be examined for their color, odor, texture, state.

2. Spreadability

The Spreadability of samples was determined. Take 0.5 g Polyherbal Antifungal cream formulation was placed within a circle of 1 cm diameter on a glass slide over which a second glass plate was placed, a weight of 500 g was allowed to rest on the upper glass slide for 5 min. Spreadability refers to the area covered by a fixed amount of Polyherbal Antifungal cream sample after the uniform spread of the sample on the glass slide. The increase in the diameter is because of the spreading of the test Polyherbal Antifungal cream.

3. Irritancy

Test Mark a neighbourhood (l sq. cm) on the left dorsal surface. The cream was applied to the required area and time was noted. Irritancy, erythema, and edema were checked if any for normal intervals up to 24 h and reported.

4. Washability

A small amount of cream was applied and washed under running water.

5. PH

0.5 g cream was taken and dispersed in 50 ml distilled water and then pH was measured by using digital PH meter.

6. Phase Separation

The prepared cream was transferred in a suitable wide mouth container. Then stored the cream for visualization after 24 hours. We will visualize the oil phase and aqueous phase separation.

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III. RESULT AND DISCUSSION

1. Phytochemical Screening

S.No.	Tests	Tulsi	Turmeric	Aloe vera
1.	Tannins	+	-	-
2.	Alkaloids	+	+	+
3.	Saponins	+	-	+
4.	Phenol	+	+	+
5.	Flavonoids	+	+	-

Table 2. Phytochemical Screening

2. Organoleptic Property

Features	F1	F2	F3
Color	Faint yellow	Faint yellow	Faint yellow
Odor	Mild herbal	Mild herbal	Mild herbal
Texture	Smooth	Smooth	Smooth
State	Semi-Solid	Semi-Solid	Semi-Solid

Table 3. Organoleptic Property

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3. Determination of pH, Spreadibility, Washability, Phase separation

Features	F1	F2	F3
pH	6.3	6	5.8
Spreadibility	53.7	40.3	47.4
Washability	Easily washable	Easily washable	Easily washable
Phase separation	No phase separation	No phase separation	No phase separation

Table 4. Determination of pH, Spreadibility, Washability, Phase separation

Fig.no.1. Polyherbal Antifungal Cream

IV. CONCLUSION

In the present work, it was decided to extract and formulate polyherbal antifungal cream. The antifungal cream was o/w type emulsion, hence can be easily washed with plane water that is
better customer compliance. The use of herbal cosmetics is increasing day by day because of less Side effects. The extracts exhibited good anti-fungal activity. The prepared formulation has no evidence of phase separation and good consistency during the study period. Stability parameters like appearance, nature and odour of the formulations showed that there was no significant
variation during the study period the formulation has PH range of approximately 6.5 which is not irritant to skin and

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suitable for skin, it conforms the compatibility of the formulations to skin secretions. The cream is expected to produce protection to the skin from fungal infections.

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