

Development of Medicated Soap Containing Antifungal Properties Using Herbal Phytoconstituents

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Abstract:-

People are most commonly affected by fungal skin infections, which need careful attention both during treatment and in order to preserve healthy skin. Certain herbal plants possess antifungal properties. The current study's goal is to create antifungal herbal bath soap by combining several herbal plants. The neem leaf, aloe vera, and tulshi were used in the formulation of the herbal soap, which is very been shown in studies involving its chemical ingredients. It shows beneficial and has no negative effects. Every plant ingredient is readily accessible in the market and its environs. Additional medical benefits of neem include its anti-inflammatory, anti-hyperglycemic, anti-ulcer, antimalarial, antifungal, antibacterial, antimutagenic, and anticarcinogenic qualities, all of which have. The aloe plant yields a material that is used in cosmetics and is used to cure psoriasis and burns on the skin. as well as acne. Tulshi provides several skin benefits, such as cleaning the skin with a beep. Acne treatment brightens skin tone. In addition to its health benefits, turmeric has antifungal qualities.

Keywords:- Turmeric, Tulshi, Neem, Alovera, and antifungal soap.

I. Introduction:-

Neem Tulsi Alovera Soap removes all impurities from your skin and shields it from breaking out in pimples and acne. Aloe Vera inhibits acne-causing bacteria with its antifungal and antibacterial qualities while also acting as a natural moisturiser to keep your skin feeling renewed and nourished. Vital herbs like tulsi and neem keep acne and pimples from appearing on your skin and bring back its natural radiance.

Herbal cosmetics are divided into categories based on the dosage form (cream, powder, soaps, solutions, etc.) and the body area or organ they are

intended for (cosmetics for the skin, hair, nails, teeth, and mouth, for example). The fundamental principles of skin care cosmetics are deeply ingrained in the medical systems of the Rigveda, Yajurveda, Ayurveda, Unani, and homoeopathy. These are the goods that use extracts or crude forms of botanicals. 1.1 Skin: The skin covers the whole exterior surface of the body, making it the biggest organ. The epidermis, dermis, and hypodermis are its three constituent layers, and each has a distinctly different architecture and function. It completely envelops the body. It acts as a barrier against damage, infection, heat, and light. Additionally, the skin controls body temperature is a sensory organ that stores fat and water. stops water loss stops microorganisms from entering serves as a barrier between the living thing and its surroundings, assisting in the production of vitamin D when it is in the sun.

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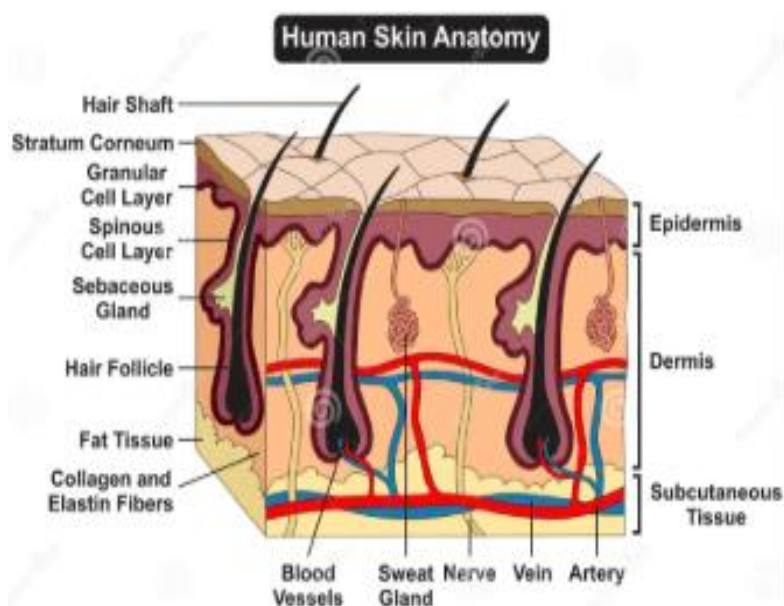


Fig:- Skin Anatomy

Fungal Infection:-

Fungal infections of the skin, medically termed **cutaneous mycoses**, are among the most common dermatological conditions affecting humans. These infections are caused by a diverse group of fungi that invade the superficial layers of the skin, hair, and nails. Although they rarely pose a serious threat to overall health in immunocompetent individuals, they can cause significant discomfort, cosmetic concerns, and in some cases, chronic or recurrent infections. Fungal infections are not only a medical issue but also a public health concern due to their

high prevalence, ease of transmission, and potential for outbreaks in communal environments such as schools, gyms, and dormitories.

Symptoms of a fungal infection include:

1. irritation
2. scaly
3. skin redness
4. Rashes
5. Swelling
- 6.. Blisters



Fig:- Fungal Infection

Most Common Skin Disease :

- 1) Eczema
- 2) Acne
- 3) Rashes
- 4) Psoriasis
- 5) Allergies
- 6) Ringworm etc

Fungal Infection can affect the:

- 1) Circulatory System
- 2) Respiratory System
- 3) Skin and Nails

- Kingdom – Plantae
- Family – Lamiaceae
- Genus – Ocimum
- Species – Ocimum tenuiflorum



Fig:- Tulsi

1. **Drug Profile:-**

Reetha

- Biological name – Sapindus mukorossi
- Common name – Reetha, Soapnut, Indian Soapberry
- Synonyms – Sapindus saccatum
- Kingdom – Plantae
- Family – Sapindaceae
- Genus – Sapindus
- Species – S. mukorossi
- Order – Sapindales



Fig:- Reetha

Tulsi

- Biological name – Ocimum tenuiflorum (Ocimum sanctum)
- Common name – Tulsi, Holy Basil
- Synonyms – Tulasi, sacred basil

Aloe vera

- Biological name – Aloe vera (L.) Burm.f.
- Common name – Aloe vera, Ghritkumari, Aloe
- Synonyms – Aloe barbadensis miller, aloe indica royle
- Kingdom – Plantae
- Family – Asphodelaceae
- Genus – Aloe
- Species – Aloe vera



Fig: Aloe vera

2 Materials & Methods:- The plant and other ingredients that should be used for the formulation is collected as per specification and well tested in laboratories with authentication.

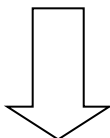
Table 1: Ingredient table

SR. NO.	INGREDIENT	QUANTITY (g)	PROPERTIES
1	Aloe vera gel	20 g	Soothing, healing, moisturizing
2	Coconut oil	8 g	Emollient, antimicrobial
3	Neem extract	5 g	Strong antifungal & antibacterial

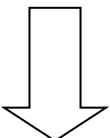
4	Turmeric extract	2 g	Anti-inflammatory, antioxidant
5	Glycerin	5 g	Humectant, moisture retention
6	Stearic acid	6 g	Thickener, stabilizer
7	Cetyl alcohol	4 g	Emulsifier, smooth texture
8	Emulsifying wax	8 g	Helps form stable O/W cream
9	Distilled water	14 g	Base, solvent
10	Preservative	1 g	Prevents microbial growth
11	Tulsi Extract	1g	Antibacterial

Methodology:-

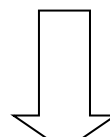
1. Weigh all ingredients accurately as per given quantity.



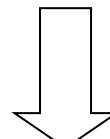
2. Take soap base (or oils like coconut oil if cold process) in a clean beaker.



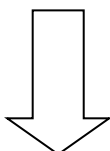
3. Heat the soap base on a water bath at 60–70°C until completely melted.



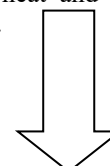
4. Add stearic acid and allow it to melt completely.



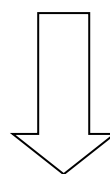
5. Add glycerin and mix properly.



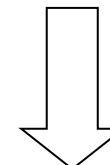
6. Remove from heat and allow to cool slightly (around 45–50°C).



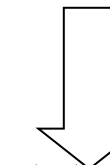
7. Add aloe vera gel and mix well.



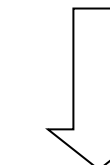
8. Add neem extract and stir properly.



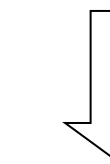
9. Add turmeric extract and mix uniformly.



10. Add tulsi extract and stir thoroughly.



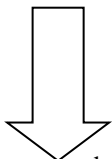
11. Add preservative (if required) and mix well.

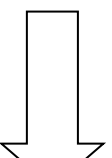


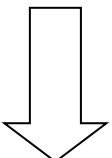
12. Stir continuously to ensure uniform distribution of all ingredients.



13. Pour the mixture into soap molds.


14. Allow it to cool and solidify at room temperature.


15. Remove the soap from molds after complete hardening.


16. Dry (cure) the soap for 24–48 hours before use.

6. Evaluation test of Formulation:-

- **Homogeneity:** The formulation were tested for homogeneity by visual appearance and by touch.
- **Appearance:** The appearance of the Soap was very clear.
- **Thermal stability:** Thermal stability of the formulation was determined by the humidity chamber controlled at 60-70/ RH at room temperature. This soap is mainly stable at room temperature temperature increases it mainly unstable.
- **pH measurement:** The pH test checks the acidity or alkalinity of the soap to ensure skin compatibility. A soap solution is prepared using distilled water and tested with pH paper or a pH meter. The ideal pH for antifungal herbal soap ranges from 8s to 9. This helps prevent skin irritation, dryness, and damage while maintaining effectiveness. Proper pH ensures the soap is gentle, safe, and suitable for regular use on sensitive or infected skin.
- **Irritancy test:** Mark an area (1 sq. cm) on the left hand dorsal surface. The Soap was applied to the specified area and time was noted. Irritancy, erythema, edema, was

checked if any for regular intervals upto 24hrs and reported.

- **Viscosity:** The formulation's viscosity was measured in triplicate using a Brookfield or Ostwald viscometer at 100 RPM and spindle number 7 at a temperature of 25°C. The average of the three readings was noted.
- room temp and elevated temp and observed on both, 5th, 10th, 15th and 20th day for any change in color, phase separation etc.
- **Subjective Properties:** Consistency, feel on application and irritation parameters are determined.
- **Percentage Yield:** Foam formation: The percentage yield was calculated by the formula. $\text{Percentage Yield} = \frac{\text{Practical Yield}}{\text{Theoretical Yield}} \times$
- **Foam Test:**
- The foam test evaluates the soap's ability to produce and retain lather, which is important for cleansing action. A measured amount of soap is mixed with water and shaken in a cylinder. Foam height and stability are observed. Good soap produces moderate, stable foam. It indicates effective removal of dirt, oil, and microbes. Excess foam is not necessary, but stable lather improves user satisfaction and cleansing efficiency.
- **Washability Test:** For ten minutes, a portion of the gel was placed to the hand's skin and left to flow under the force of the tap water. The moment the gel was entirely withdrawn was recorded.

Result and Discussion:-

Tests were conducted on the physicochemical characteristics, including pH, colour, odour, and appearance. Using a pH strip, it was discovered that the soap's pH was 6.5. The remaining criteria, which included foam height and moisture content for foam retention, were also established.

The formulation of soap employing neem, aloevera, and tulsi extracts is the focus of the current study. The created soap had a good appearance, was dry and stable, and had a frothy texture without changing colour. It displayed high compatibility with skin.

Table 2 Evaluation Parameter and their result:-

S. no.	Parameter	Standard	Result
1.	Ph	8-9	8
2.	Physical Appearance	Clear	Clear
3.	Skin irritation	No irritation	No irritation
4.	Solubility	Water	Soluble
5.	Washability	Easily washable	Yes

Table 3: Organoleptic test of Soap

S. No.	Organoleptic features	Observations
1	Colour	Dark brown
2	Odour	Aromatic & fragrannce
3	Taste	Persistent or bitters
4	Texture	Smooth



Fig:-PH test



Fig:-Foam test



Fig:- Skin Irritation test

9. Conclusions:-

The antifungal herbal soap was successfully formulated using a blend of natural ingredients such as neem, turmeric, tulsi, aloe vera, and coconut oil along with suitable soap bases and stabilizing agents. The formulation effectively combines cleansing, moisturizing, and antifungal properties in a single product. Each ingredient contributes specific benefits, where herbal extracts provide antimicrobial and antifungal action, while base ingredients ensure proper texture, stability, and user-friendly application.

The developed soap is smooth in texture, stable in structure, and has a pleasant natural herbal fragrance without the use of synthetic chemicals. It is designed to gently cleanse the skin while maintaining moisture balance, making it suitable for regular use on normal as well as sensitive skin. The inclusion of moisturizing agents like glycerin and aloe vera helps prevent dryness and irritation, which are common issues with conventional soaps.

Overall, the antifungal herbal soap can be considered an effective natural alternative for maintaining skin hygiene and managing mild fungal infections. Its herbal composition ensures safety, reduced side effects, and eco-friendly characteristics. Thus, the formulation is successful in achieving its objective of providing a safe, effective, and herbal solution for skin cleansing and antifungal protection.

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