



“FORMULATION AND EVALUATION OF POLYHERBAL ANTIFUNGAL CREAM PREPARED FROM NEEM, GARLIC AND GINGER”

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Abstract— Fungal diseases become a major medical problem. Fungal disease is difficult to manage because they tend to be chronic, hard to diagnosis. The fungal infection is a common condition caused by fungi. The herbal antifungal cream was formulated by using various herbs such as neem, garlic, ginger and aloe vera. Herbal medicine is one of the oldest and most universal system of health care system. The herbal antifungal cream is very helpful and it is fewer side effects. All herbal ingredients are easily available in market. The herbal antifungal cream is used to treat fungal infection which most commonly affect our skin, hair and nails. Herbal antifungal cream is used to treat fungal skin infection such as athletes' foot, ringworm and jock itch. This herbal antifungal cream represents a natural and safe to use, and this herbal antifungal cream is beneficial in reduction of fungal infection. The aim of the present research was to formulate the herbal Cream for the purpose of Moistening, Nourishing, lightening & Treatment of various diseases of the skin. Different crude drugs; Aloe barbadense (Aloe Vera leaves), Azadirachta Indica (Neem- leaves), Allium sativum (Garlic), ingiber Officinale (Ginger) were taken. All the products were found to be stable with no sign of phase separation and no change in the colour. The patch test for sensitivity testing has also been done and no evidence of skin irritation and allergic signs. This work mainly focuses on the assessment of the microbial quality of Formulated cosmetic preparations. To the surprise,

both formulations was found to comply with the microbial limit tests as per the international specifications. Thus, herbal cosmetics formulation is safe to use was proved and it can be used as the provision of a barrier to protect skin.

Keywords— Neem, garlic, ginger.

Introduction

The concept of beauty and cosmetics is as ancient as mankind and civilization. Indian herbs and its significance are popular worldwide. An herbal cosmetic has growing demand in the world market and is an invaluable gift of nature. Herbal formulations always have attracted considerable attention because of their good activity and comparatively lesser or nil side effects with synthetic drugs. Herbal cosmetics are defined as the beauty products which possess desirable physiological activity such as healing, smoothing appearance, enhancing and conditioning properties because of herbal ingredient. Now-a-days the usefulness of herbs in the cosmeceutical production has been extensively increased in personal care system and there is a great demand for the herbal cosmetics. Cosmetics are the substances intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, and altering the appearance without affecting the body's structure or functions. But the usage of synthetic products becomes very harmful from long time for the youth as well as our environment. Various synthetic compounds, chemicals, dye and their derivative proved to cause various

skin diseases having numerous side effects. Thus, we are using herbal cosmetics as much as possible. The basic idea of skin care cosmetic lies deep in the Rig-Veda, Yajurveda, Ayurveda, Unani and Homeopathic system of medicine. These are the products in which herbs are used in crude or extract form. These herbs should have varieties of properties like antioxidant, anti-inflammatory, antiseptic, emollient, anti-seborrheic, antihemolytic activity and antibacterial etc [5].

I. Cosmetics are developed to reduce wrinkles, fight acne and to control oil secretion. For various types of skin ailments formulations like skin protective, sunscreen, antiacne, antiwrinkle and antiaging are designed using varieties of materials, either natural or synthetic. Cream is a polyherbal formulation that consists of Neem, Garlic and Ginger. That herbs have been selected on the basis of a traditional system and scientific justification with modern uses. An herbal cream that can give effective protection to skin and free from any toxicity or toxic residue or any irritation when regularly used and should also be cosmetically acceptable.

Advantages of Herbal system of Medicines

Herbal medicine has not only stood the test of time but is growing in popularity as more people turn to these natural remedies to treat diseases, manage symptoms, reduce pain and maintain optimal health.

- Accessible and Affordable

According to a 2022 Kaiser Family Foundation survey, about half of U.S. adults report struggling to afford health care and prescription medications, and nearly 40% have delayed seeking treatment, skipped medications, or gone without medical care due to the high cost. In comparison, herbal medicine is generally more affordable than conventional western medicine, and herbal remedies cost significantly less than many pharmaceutical drugs. The low cost of herbal medicine makes it far more accessible for all, no matter their income or health insurance coverage.

- Can Be Used as Food and Medicine

Herbs are rich in nutrients and health-promoting properties, which makes them beneficial not only as medicine but as food. Used fresh or dried, herbs can be used to add flavor and color to foods and beverages. Research shows that herbs have

antioxidant, anti-inflammatory and anti-tumor properties that help reduce blood pressure and cholesterol, fight off respiratory diseases and lower the risk of cancer.

Disadvantages of Herbal system of Medicine

Herbal medicine, as with all types of medicine, has potential risks and disadvantages.

- Lack of Regulation

The U.S. Food and Drug Administration (FDA) considers herbal remedies dietary supplements and does not subject these medicines to the same testing, manufacturing and labeling standards as prescription and over-the-counter drugs. Some herbal products may contain additives or other ingredients not listed on the label, or be contaminated with other materials due to a lack of safety testing. This means that not all herbal products are created equally, and the quality can vary widely between batches, brands or manufacturers.

- Potential Side Effects and Toxicity

Though herbal remedies are derived from plants, it's important to remember that "natural" doesn't necessarily mean "safe". Some herbs may cause negative side effects, including allergic reactions, asthma, headache, diarrhea, dry mouth, fatigue, nausea, agitation or vomiting. Some herbs can cause liver toxicity, such as kava-kava.

- Herb Misidentification

People who practice foraging wild herbs run the risk of misidentifying a plant. Some poisonous plants can look very similar to safe herbs growing in the wild. If poisonous plants are consumed, this can lead to gastrointestinal discomfort or death. It's always safest to grow your own herbs so you know exactly what you're consuming.

TABLE I

S.No.	Ingredient	Quantity	Roles
1.	Neem	20 ml	Antifungal agent
2.	Garlic	20 ml	Antifungal agent
3.	Ginger	20 ml	Antifungal agent
4.	Aloe vera gel	20 ml	Soothing agent, moisturizer
5.	Glycerine	10 ml	Lubricant
6.	Tween-20	10 ml	Emulsifier
7.	Beeswax	1.5 gm	Emollient

8.	Borax	0.2 gm	Buffer
9.	Silica gel	0.1 gm	Adsorbent
10	Bentonite	4 gm	Thickening agent
11	Phenoxyethanol	0.2 gm	Preservative
12	Rose oil	q.s.	Fragrance

METHODOLOGY

Method of extraction (neem extract)

- Mixed with 500 ml of distilled water.
- Boiled for 30 min.
- Take 50 gm of dried neem leaf powder.
- Boiled solution was filtered using filter paper.
- Clear aqueous leaf extract was obtained.

Method of extraction (Garlic extract)

- Take 20g of dried garlic.
- Mixed with 100 ml of distilled water.
- Boiled for 30 min.
- Boiled solution was filtered using filter paper.
- Clear aqueous garlic extract was obtained.

Method of extraction (Ginger extract)

- Take 20g of dried ginger.
- Mixed with 100 ml of distilled water.
- Boiled for 30 min.
- Boiled solution was filtered using filter paper.
- Clear aqueous ginger extract was obtained.

Method of preparation

Take two beaker A & B wash and clean properly.

❖ In Beaker A

- Take aloe vera gel.
- Add neem extract, garlic extract and ginger extract with the continuous stirring.

❖ In Beaker B

- Take Glycerine & boil.
- Add bees wax & tween 20 with continuous stirring.
- Add borax & silica gel continuous stirring.
- Then add Phenoxyethanol.
- Mix beaker A & B together with constant mechanical stirring.
- Add bentonite with continuous stirring.
- Then the formulation cools in room temperature for 5 min.
- Then add rose oil for fragrance.

Evaluation parameter

pH determination

The pH of various semi-solid (cream) formulations were determined by using a digital pH meter. Weight 2.5g of cream and dispersed in 25ml of distilled water and stored for 2 hours. Then measurement of pH by using a digital pH meter.

Result: The pH values are 5.87.

Sr.no.	Properties	Observations
1.	Colour	Pale yellow
2.	Odour	Characteristic
3.	Appearance	Semi-solid
4.	Texture	Smooth

Patch test

A patch test for a herbal antifungal cream involves applying a small amount of the product onto a small area of the skin, typically on the forearm or behind the ear. The purpose of this test is to evaluate the cream's potential for causing irritation or allergic reactions in sensitive individuals. After application, the area is observed for any signs of redness, swelling, itching, or other adverse reactions over a period of 24 to 48 hours. This test helps to assess the cream's safety profile and determine if it is suitable for use on larger areas of the skin without causing harm or discomfort.

Result: No any inflammation or irritation to the skin.

Spreadability test

The Spreadability test for a herbal antifungal cream assesses its ability to evenly distribute and cover a given surface area upon application. This test typically involves placing a fixed quantity of the cream onto a standardized surface, such as glass or a skin mimic substrate, and measuring the diameter of the spread after a specified time period. Factors like viscosity, texture, and formulations components influence the cream's Spreadability. A cream with good Spreadability ensures uniform coverage, easy application, and enhanced efficacy. This test helps in optimizing formulation parameters to achieve desired spreading characteristics for better consumers experience and therapeutic outcomes^[25].

Result: Good Spreadability ensures uniform coverage, easy application, and enhanced efficiency.

Homogeneity

The homogeneity of herbal antifungal cream is crucial for consistent effectiveness and application. Ensuring uniform distribution of active ingredients throughout the product is essential to guarantee each application delivers the intended benefits. Achieving homogeneity involves meticulous formulation and manufacturing processes, including thorough mixing of ingredients and quality control measures. Manufacturers utilize techniques like blending, emulsification, and particle size reduction to achieve desired consistency.

Result: Cream are uniform distribute on skin.

Viscosity

Viscosity is tremendously important in cosmetics and personal care products because it plays a role in determining everything from a product's sensory profile to its stability. Understanding how viscosity works is key to being able to modify these properties to create the desired profile for any particular product.

Result: 21801mPa.

Microbial test

Microbiological testing is a key aspect of cosmetic product safety and quality. In order to meet the regulatory requirements, such as those specified by the Cosmetics Regulation (EC), the microbiological quality of raw materials must be well understood and furthermore, batches of

formulated cosmetic products must be tested for microbiological quality before released.

Result

Sr.No.	Test	Result
1.	Physical Evaluation	Texture
A.	Colour	Pale yellow
B.	Odour	Characteristic
C.	Appearance	Semi-solid
D.	Texture	Smooth
2	pH	5.87
3	patch Test	No irritation on the skin.
4.	Spreadability Test	Good Spreadability ensure uniform coverage, easy application, and enhanced efficacy
5.	Homogeneity	Cream are uniform distribute on skin.
6.	Viscosity	21801mPa
7.	Microbial Test	It inhibits growth of fungi and kill them

Conclusion:The increasing global awareness of the environmental impact of pharmaceuticals and a growing desire for sustainable, natural solutions have propelled herbal remedies into the spotlight. Herbals antifungal creams, harnessing the power of plant extract, represent a compelling alternative to synthetic medications, offering a balance between efficacy and safety. one of the key strengths lies in the generally well-tolerated nature of herbal formulation, often associated with synthetic counterparts. Scientific advancements in herbal medicine research further substantiate the efficacy of specific plant compounds against fungal pathogens. This intersection of traditional herbal knowledge and modern scientific validation enhances the credibility of herbal antifungal remedies, paving the way for great integration into mainstream health care practices. The future trajectory of herbal antifungal creams is marked by sustainability, safety and efficacy making them a compelling choice in the evolving landscape of antifungal treatments.

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