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Formulation and Evaluation of Paper Soap Strips from Neem Oil

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Abstract: *Herbal cosmetics, often called Ayurvedic cosmetics, are made using natural substances that have no negative effects on human health. These compounds are derived from a variety of botanical source The measures that are used include weight gain, visual analysis, moisture content, foam stability, pH value, free alkali content, and organoleptic test. The outcome of the physiological characteristics was made public. These actions were taken to ensure that our soap formulation would work as best it could Finding out how to make paper soap from neem leaves, Glycerine, essential oil, and premium, disposable hand wash is the aim of the formulation. In India A. indica, commonly referred to as Indian lilac, is revered as the most sacred herb. A. Juss belongs to the mahogany family, which has a number of medicinal uses for people. Historically, many parts of the plant, such as the leaves, flowers, fruits, roots, and bark, have been used to treat a range of ailments Because of their antiviral, antifungal, anti-inflammatory, and anti-dermatitis qualities, its antibacterial ingredients are also used. These compounds come from a range of botanical sources, and the work aims to highlight the most recent ones. Weight gain, visual analysis, moisture content, foam stability, pH value, free alkali content, and organoleptic test are among the metrics that are employed. These steps were taken to guarantee the optimal performance of our soap formulation. The paper soap's formulation included neem leaves..*

Keywords: anti-inflammatory, essential oil, paper soap, and antibacteriala

I. INTRODUCTION

Given the rising number of illnesses brought on by bacteria and germs, cleanliness is Crucial.One A mixture of natural oils or fats with sodium hydroxide or another strong alkali, soap is a material used withwater for cleaning and washing. Usually, colouring and perfume added,nowadays, soap is used for more than just cleaning to keep skin healthy; various types of soap can also be used as whitening and softening agents. Many types of fats or oils are frequently used as raw materials to make soap. The sort of oil chosen for use in soap production must be in line with the soap's intended use[3,4] Paper soap is a thin, dry sheet of soap that dissolves in a few seconds when diluted with a modest amount of water. It is a handy, portable cleaning solution that works well on both the face and handsHand washing soap that is portable is what people seek these days. Paper soap is a solid soap product innovation that is printed or molded to be as thin as paper. When it comes into contact with water, it dissolves and transforms into foam. Due to its thinness and tiny size, soap paper is typically used as a disposable hand soap that can be carried anywhere and utilized for any outdoor activity. These days, soap is made with lipids and an alkali. The cold process method is currently the most popular Technique, however some soap manufacturers continue to use the conventional hot process. A very thin layer of soap is called neem paper soap. Neem paper soap is a thin layer of soap, and it is an anionic surfactant used for cleaning and washing. When mixed with water, this anionic surfactant is used for cleaning and washing. It is inexpensive, portable, and easy to Paper soap is a dry, lightweight soap sheet that dissolves rapidly in a small quantity of water. It is a little, useful cleaning tool.[5] Neem oil is an essential oil extracted from the leaves of the neem tree. In contrast to other essential oils, this one is extracted as a cold-pressed oil by centrifuging neem leaves. Chemical composition: The chemical composition of neem oil is almost entirely composed of organic chemicals, such as terpenoids, limonoids, oily Sulfur compounds, unsaturated fatty acids, and azadirachtin. Ascorbic acid, 6desacetylnimbinene, 7-desacetyl-7-benzoylazadiradione, 7-desacetyl-7-benzoylgedunin, 17-l, and amino acids are among the major compounds found in leaves [15–17]. Neem oil's therapeutic benefits include Amino acid, ascorbic acid, n-hexacosanol,7-desacetyl-7-

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benzoylazadiradione,7-desacetyl-7benzoylgedunin,17 hydroxyazadiradione, 6-desacetylnimbinene, nimbi-diol are among the leaves [15–17]. Neem oil's antibacterial, antifungal, antiseptic, and anti-inflammatory properties are among its therapeutic benefits. It significantly raises the value of numerous items, especially cosmetics. The solid soap formulations were intended for topical use. The soap formulations were made using various herbal oils, extracts, and excipients. (7) Cosmetic goods protect the skin from a range of endogenous and external harmful elements while also enhancing the skin's beauty and appeal. Cosmetics are used for more than just making one appear nice; they also help to sustain excellent health by improving skin problems.[15] Understanding the basic anatomy and function of the human skin is essential for all medical professionals. Skin is also known as the cutaneous membrane. Adult skin has a surface area between 1.2 and 2.2 m^2. There are two types of skin: hairless skin, which is found on the soles of the feet and palms of the hands, and hair-bearing skin, which covers a significant amount of the body.[1] The skin is the body's main defence against infections and is the part of the body most exposed to environmental toxins and sunlight.

Plant-based soap

With its antibacterial, anti-aging, anti-oxidant, and antiseptic qualities, herbal soap preparation is a medicine that primarily uses plant parts including seeds, rhizomes, nuts, and pulps to treat illness or injuries or to promote Health .When opposed to commercial soap, herbal soap does not contain artificial colour, flavour, fluorides, or other ingredients.[6] Herbs are natural products that are used to treat nearly every ailment and skin condition because of their great medicinal value, affordability, accessibility, and compatibility.[7 Cosmetics designed for skin care improve the skin's texture, health, and hydration. A good formulation designed for topical use is Polyherbal Soap.

The creation Benefits of neem include :

As a face pack, crush the neem leaves and stir in gulab jal till a paste-like consistency is achieved. Apply this paste all over the face until it dries, then remove the pack with cool water. One receives a glowing After using the skin care products daily for a week, the skin becomes healthier, more hydrated, and has a clearer complexion.(4 Crush the orange peel and neem leaves coarsely to use as a scrub. Mix some milk, a little lemon juice, and a few drops of honey to make a paste. Use this to gently wash your face in circular strokes for fifteen minutes. Because it eliminates wrinkles and pigmentation and leaves skin feeling renewed after two weeks, it is crucial to perform it on separate days.[22] To treat acne and pimples, mix a small amount of aloe vera gel with a drop of neem oil. Apply to the areas affected by pimples and acne, and let it sit overnight. Do this twice a day to get rid of skin problems. Since ancient times, people have used the neem tree, Azadirachta indica, as a source of medicine. Neem's seed, bark, and leaves are among the sections that contain a variety of chemicals. Because each portion of neem has unique chemical features, its efficacy in treating different kinds of ailments may vary [2].

Material Method :

1) Neem Extract :

Neem is a very important traditional medicinal plant in India that has been used extensively in Ayurveda, Unani, and homeopathic medicine and has become a focus of modern medicine. The consensus is that the general antimicrobial activity of neem extracts is mainly due to azadirachtin. Gently grind 1-2 kg of healthy and disease-free neem leaves using clean utensils. Add 2-4 litres of water and stir the mixture well and leave under a cover for 3 days. Strain with a cloth to get a clear extract. Dilute 1 litre of neem leaf extract with 10 litres of clean water.[20]

Fig 1 : Neem Extract

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2) Neem Leaf Oil:

A naturally occurring insecticide, neem oil is present in neem tree seeds. It smells of sulfur and garlic, is yellow to brown, and tastes harsh. It has been used to manage illnesses and pests for hundreds of years. Many goods on the market now contain neem oil components. These consist of soaps, cosmetics, toothpaste, and shampoos for pets. Neem oil is made up of many ingredients. Neem oil contains azadirachtin, which is the most effective ingredient for keeping pests away and destroying them. The residue is known as clarified hydrophobic neem oil.[21]

Adding neem leaf oil to leather goods may also extend their lifespan. Especially for skin issues, it is utilized as a herbal cure to avoid general illnesses. As a result, neem leaves have long been used in medicinal preparations for a variety of anti-inflammatory, antibacterial, antiviral, antioxidant, and hepatoprotective

Fig 2 : Neem Oil

3 Base for Soap:

The basis of several soap-making techniques, including melt-and-pour soap, is soap base. This finished, unscented soap foundation enables soap makers to produce personalized soaps without having to start from scratch by adding colors, perfumes, and other components. Soap base is a ready-to-use base that has been saponified, or transformed into soap. This finished soap is necessary and free of colors, scents, and other ingredients. Different kinds of soap bases exist, such as clear, opaque, and those with particular qualities like glycerin or other components.

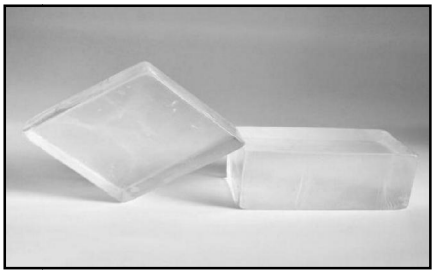

Fig 3 : Soap Base

Method:

The Soxhlet apparatus method involved chopping neem leaves into little pieces and letting them completely dry in the sun. Roughly powdered dry neem leaves were used. Weighing the powdered neem leaves and recording the outcome was done. The Soxhlet extractor apparatus was filled with the weighted sample. Weighing the powdered neem leaves and recording the outcome was done.The weighted sample was fed into the Soxhlet extractor apparatus. The extraction was carried out using regular ethanol. By heating the solvent in the round-bottom flask over the heating mantle until it evaporated, condensed, and passed through the sample, the oil was extracted, creating a mixture of solvent and oil.

The Whatman® No. 1 filter in the Soxhlet was then used to separate and filter this combination.A rotary evaporator was used to compel ethanol to evaporate, leaving behind Whatman® No. 1 Neem leaves.7.5 milliliters of oil were produced from one kilogram of neem leaves.

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Fig 4: Soxhlet Apparatus

Essential Oil Separation: The combination separates into two different layers of water and oil when placed in a separatory funnel, as seen in fig. Being denser than oil, water collects in the funnel's bottom. After the funnel tap is opened, the liquid at the bottom of the funnel is subsequently transferred into a container.

Formulation Table:

Ingredients	Quantity
Extracted neem oil	ml 6
Rose Water	ml 0.8
Soap Base	QS
Butter Paper	QS
Glycerine	ml 1.5

Table No:1 Formulation Table

Procedure for Paper Soap:

The extracted neem oil was combined with additional substances, such as glycerine and rosewater, and added to water with scent. The mixture was well agitated, and the volume was adjusted using green color. We then heated the soap base until it was a semisolid liquid, added the other components, stirred occasionally, and applied the mixture to the better paper while it was being dipped. The paper was then allowed to dry for a while before being cut to size and wrapped to create the Neem oil paper soap strip.

Fig 5 : Mixture of Components

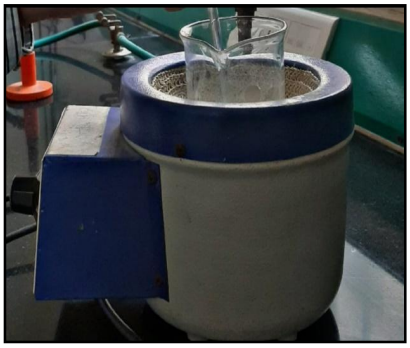

Fig 6: Heating Mentle

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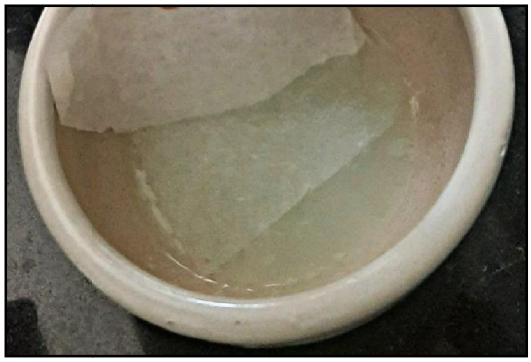

Fig 7 : Dipping Paper

Fig 8: Neem Oil Paper Soap Strip

Discussion:

* Finding and Interpretation

1) Characteristics of organoleptic

A. Color; B. Odor; and C. Look

Examining the physical characteristics of herbal paper soap: When creating the herbal paper soap, the following qualities were evaluated.

1) pH: Prior to and during the creation of paper soap, the pH was measured. When the liquid soap was first made and the pH was measured with litmus paper, the blue litmus stayed the same while the red litmus paper went blue. Following the creation of paper soaps, a piece of paper soap was added to water, shaken thoroughly, and the pH was measured using a pH meter.

2) Foam retention: A measuring cylinder was filled with water, and the soap strips were added. The cylinder was then covered with a hand and shaken ten times. The volume of the foam was monitored at one-minute intervals. It was found that the height of the foam was

3) Height of Foam: Twenty milliliters of distilled water were added to the sample, which was then put inside the measuring cylinder. After a minute of shaking, the foam height was instantly identified as F1. The foam height, which should have been 2 cm, was measured and recorded as F2 ten to fifteen minutes later. Foam height calculation: F1–F2.

4) Test for primary skin irritation: At least three participants were selected, and soap strips were made and applied to the hands to gauge the level of irritation.

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Results:

1) Parameters of Organoleptic:

A) Organoleptic examination of the plants utilized:

A. Dark green colour

B. Sulfur like and garlic-like smell

C. Good appearance

2) Evaluation of Paper Soap:

A. Greenish\Whitish in colour.

B. Strong, fragrant scent.

C. Clarity - To evaluate the liquid soap, it was placed on a white background.

3) An organoleptic assessment of paper soap:

A. Size -3/7 cm.

B. Rectangular shape.

C. Strong smell.

D. pH -7

F. Foam Height – 20cm

E. Foam retention -3 min

II. CONCLUSION

some conclusions from studies on the formulation and evaluation of paper soap strips from neem oil: Skin suitability: The soap is suitable for human skin and can be used as a therapeutic alternative for skin problems.

Therapeutic effectiveness: The soap is therapeutically effective against bacterial infections. Economical: The soap is economical, safe, convenient, and easy to use.

Chemical-free: The soap is free from artificial colorants and fragrances. Antimicrobial properties: The soap may have antimicrobial properties.

Non-irritant: The soap is non-irritant and maintains the skin's natural pH, Anti-bacterial and antifungal: The soap has anti-bacterial and anti-fungal properties.

Easy to carry: The soap is easy to carry and is used by Travelers. The process of making soap is called saponification, which is an exothermic reaction between vegetable oil and sodium hydroxide solution.

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