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Formulation Development and Evaluation of Herbal Soap

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ABSTRACT
The need to achieve and maintain healthy skin is on the rise. This causes the composition of antioxidant soaps with complex synthetic chemicals whose safety on skin and human health is still unclear. The present work involves the formulation and evaluation of herbal soap.The herbal soap was formulated using *Azadirachta indica* and *Ocimum sanctum* and evaluated for various properties like colour, odour, pH, foam retention, foam height and antimicrobial properties. The herbal soap gave the most stable foam with over 5 minutes foam retention when small amount of soap was dissolved in distilled water. The herbal soap shows promising nonirritant action over skin and having antimicrobial properties.
KEYWORDS: Antioxidant, Herbal soap,*Azadirachta indica,Ocimum sanctum*.

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INTRODUCTION

Plants with medicinal properties are being used as traditional medicine from times immemorial. The extract obtained from the leaves, stem and roots of various medicinal plants have been employed as a natural remedy in curing various ailments and diseases. The active constituents from these extracts are responsible for medicinal values are employed topically as creams, soaps, oils and ointments for treating skin related ailments like acne, wounds, eczemas and ring-worms, as an anti-microbial agent and for cosmetic purposes [1]. The body's outermost layer, human skin acts as the body's first line of defense against a range of infections [2]. Theskin is constantly exposed to a range of stimuli because it interacts with the environment. As a result, the skin is prone to injury [3].

The natural component ofherbal medicine has no negative effects on the human body in the vast majority of cases. A pharmaceutical medication that contains antibacterial and antifungal ingredients is known as an "herbal soap preparation." It is madeup of plant parts including leaves, stems, roots, and fruits, and used to treat damage, disease, and keep peoplehealthy [4].

A natural soap is prepared without a non-natural surfactant, with addition of functional ingredient from natural substances, such as essential oils or plant extracts. Herbs are the natural products could be found in the treatment of almost all diseases and skin problems owing to their high medicinal value, cost effectiveness, availability and compatibility [5,6]. Hence it can be used in soap base. The attribute of a soap includes gentleness on the skin, rich lather, protection against various skin disorders (including rashes, eczema, scabies) treatment of skin infection (such as ringworm), protection of even skin toning and smoothness of the skin [7].

The neem tree *Azadirachta indica* belongs to family Meliaceae. Neem leaf extract consists of nimbidin, cyclic trisulphide, cyclic tetrasulphide, and polyphenolic flavonoids. These bioactive compounds support antibacterial, antifungal, and anticancer activities. It is also rich in antioxidant which helps develop new skin cell tissues [8]. Similarly tulsi (*Ocimum sanctum,* family - Lamiaceae) is one of the most valued and holistic medicinal plant which is having medicinal importance and is used for the preparation of traditional medicines from many years in India. The whole plant of tulsi is used in medicines and has been found to possess various therapeutic properties and many useful phytochemicals which act as antimicrobial agents against pathogenic microbes due to presence of various phytochemicals[9]. The aim of the present work is to formulate a herbal soap containing the extracts of Neem and Tulsi and evaluating its physicochemical properties.

MATERIAL AND METHODS

Azadirachta indica (neem) leaves and *Ocimum sanctum*(tulsi) leaves were collected from local places of Ahmednagar district. Both leaves were segregated and washed with distilled water. The leaves were dried at room temperature, grinded to small pieces, and kept for further use. Distilled water, sodium hydroxide palm oil, and coconut oil were used as received without further purification.

Extraction of neem in oil

Grinded leaves measuring 25 g were soaked into 200 mL of palm oil and heated at 120 °C for 3 h. After that the contents cooled to room temperature, the mixture was then filtered by using filter paper to remove the leaves residue. The oily filtrate was kept for further use.

Aqueous extract of Neem and Tulsi

The aqueous extraction of neem and tulsi leaves was carried out by using blending method. Grinded leaves measuring 20 g each were taken and placed into a grinder machine filled with 200 mL of distilled water and blended for 5 min. Then the sludge in the mixture was removed by using filter paper. The aqueous filtrate was kept for further use.

Formula

The formula shown in table is best suited for the preparation of herbal soap-

S. N.	Ingredients	Quantity (ml)
1	Palm oil	200
2	Coconut oil	50
3	Neem oil extract	100
4	Aqs. Neem extract	100
5	Aqs. Tulsi extract	50
6	Sod. Hydroxide solution	150

[Table 1: Formula for herbal soap preparation]

Soap preparation

The mixture of palm oil (200 mL), coconut oil (50 mL),neem oil extract (100 mL), neem aqueous extract (100 mL) and tulsi aqueous extract (50 ml) was placed in a 2000 mL beaker. The mixture was then stirred at room temperature for 30 minutes by using mechanical stirring. A 150 mL sodium hydroxide solution was added into the mixture to initiate the saponification process whereby the mixture was stirred until the reaction has been completed. The excess of alkali was removed by washing the neem soap with hot water at 90 °C and then was continued washing with 10mL aliquotsof distilled water. The neem soap paste was poured into a mould and left to dry at room temperature[10].

[Figure 1: Formulation of Herbal Soap]

Evaluation of Herbal Soap:

The herbal soap formulated was evaluated for the organolepticproperties like colour, odour and shape [11].

Physical Evaluation

a. pH

The pH was determined by using pH paper[11].

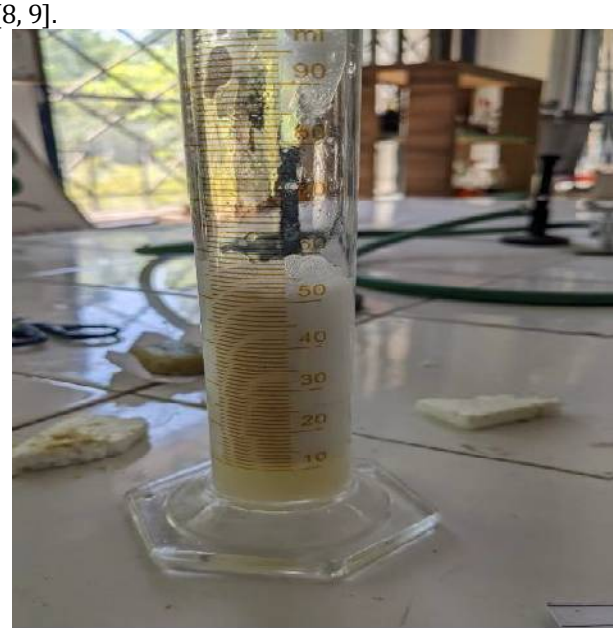
b.Foam retention

25 ml of the 1 % soap solution was taken into a 100 ml graduated measuring cylinder the cylinder was covered with hand and shaken for 10 times. The volume of foam at 1 minute interval for 4 minutes was recorded. It was found to be 5 minutes[11].

c.Irritation:

It is carried out by applying soap on the skin for 10 minutes. If no irritation experienced then it is considered as non-irritant product[12].

d. Antimicrobial testing: Various studies conducted on antimicrobial activity of neem and tulsi. Hence according to research papers, antimicrobial activity of neem leaf, bark and seed extract as well as tulsi leaf extract can be confirmed[8, 9].



[Figure 2: Herbal soap solution producing foam after shaking]

RESULTS AND DISCUSSION

S. N.	Parameter	Findings
1	Colour	Yellowish green
2	Odor	Characteristics
3	Shape	Square shape
3	pH	7
4	Foamability	Yes
5	Foam type	Compact, dense and uniform
6	Foam volume	4 ml
7	Foam stability	5 min.
8.	Skin Irritation	Non irritant

[Table 2: Evaluation of herbal soap]

The above given table describes the colour, odour, shape, pH, irritation, foamability and foam stability of the prepared herbal soap. The colour of formulation was yellowish green. The odour of formulation was characteristic. The shape was oval. As per evaluation test pH of formulation was 7 which is likely skin pH and there is no irritation.

CONCLUSION

The prepared formulation of herbal soap showing good physical characteristics. On the basis of evaluation studies the formulation provides excellent foaming property, non irritant, acceptable colour and odour with antimicrobial properties. Further clinical studies of this formulation can elevate the use of herbal soap. The most promising finding in this research is that the herbal soap is free from chemicals and is more eminent than synthetic soaps and can be used as beauty regime.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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