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Research Paper

Formulation and Evaluation of Herbal Soap

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ABSTRACT

Herbal soaps, often known as natural soaps, are made from plant-based ingredients and botanical extracts. They offer the skin several advantages since they are made of natural ingredients. Their inherent aroma, antioxidant content, nourishing and moisturizing attributes, and environmental friendliness are a few of the benefits. The preparation of the extract of the Herbal soap is based on Herbal formulation and Evaluation including organoleptic and physico-chemical parameters determination. The pH, Total fatty matter, Alcohol insoluble matter, Foam height, Foam retention, Moisture content were measured and observed. The colour and odour was observed to be Brown, smooth in texture and aromatic odour. Our study's objective is to create herbal soap through the cold method. Clove oil, Tea tree oil and coconut oil were used to make herbal soap. In the present work, antimicrobial herbal soaps were prepared, with suitable size and shape, thickness, weight, and with good foam producing ability. Herbal soaps of neem and tulsi were prepared for their anti-bacterial activity for the treatment of pimples, acne and scars. Two different formulations F1, F2 and F3 were prepared by cold press method and the formulations were characterized for different evaluation parameters like clarity, color, and odor, size, and shape, thickness, weight, pH in which they exhibited satisfactory results. The herbal soap showed a good appearance with pink color and with a pleasant aromatic smell and showed good anti-bacterial properties. Based on the study it can be concluded that herbal products can be effectively formulated in the form of medicated herbal soaps by using cold process technique with excellent anti-bacterial properties.

INTRODUCTION

Herbal soaps are skin-purifying and skin-beautifying products. The primary benefit of utilizing herbal cosmetics is their purity, which

leaves the body rich in nutrients and other beneficial minerals instead of causing any negative side effects. Individuals' skin and hair beauty is influenced by their health, lifestyle choices, regular occupation, environment, and upkeep.

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Summertime dehydration from prolonged heat contact to the skin results in wrinkles, freckles, blemishes, pigmentation, and sunburns [1]. The majority of commercial soaps on the market today have chemical ingredients that have antibacterial action and may be able to depilate skin infections. Soaps and detergents are considered disinfectants that are necessary for everyday hygiene routines. Cleaning agents, such as soaps, can be liquid, solid, semisolid, or powdered. In order to preserve health and beauty and get rid of odors from the body or inanimate objects, such as clothing, they are used to eliminate dirt, including dust, bacteria, stains, and unpleasant smells. Commercial soap is typically composed of harmful substances such as plastics, aluminum, barium, mercury, and bisphenol, among others. These substances are vaporized and absorbed through the skin, both of which have detrimental side effects on the body [2]. The usage of herbal medicines has increased dramatically in the last several years. It is believed that around 80% of the world's population uses herbal plant extracts in their medicines, both in developed and developing nations. It is recognized as one of the main medical treatments, particularly in underdeveloped nations, for a variety of illnesses. The field of medicinal research known as "Herbal Medicinal Products" emerged as a result of the astounding increase in the use of herbal plants and their extracts [3].

2. MATERIALS AND METHODS

2.1 Drugs and Chemicals

Sodium hydroxide was procured from Qualigens Fine chemicals, Mumbai. Clove oil, Tea Tree oil, and Coconut oil were procured from the local market. Glycerine, Propylene Glycol, and Sodium lauryl sulfate were procured from Thermo fisher scientific India Pvt Ltd., Mumbai. Triethanolamine was procured from Loba Chemie Pvt Ltd., Mumbai. The other entire chemicals used were of analytical grade.

2.2 Preparation of Medicated Soap

Three herbal soap formulations (F1, F2 and F3) were prepared by cold press method (Table 1). Soap bases were prepared by taking 72ml of coconut oil in 500ml of the beaker. It was placed on the water bath & heated to 70 °C. After that 29.5gms of sodium hydroxide was weighed and dissolved in 40ml of distilled water. Sodium hydroxide or Lye solution was heated to 70 °C & added to coconut oil and Stearic acid which was maintained at the same temperature. The mixture was stirred slowly and removed from the water bath after the mixture was thickened; 2ml of clove oil, 2ml of tea tree oil and 1ml of jasmine oil, and 15 gm of SLS, and 0.2ml of amaranth solution were added to the above-thickened mixture. All the contents were stirred properly (vigorous stirring was avoided to reduce foam formation in the mixture) to get a uniform soap mixture. Finally, this soap mixture was poured into circular moulds having dimensions of 8.4cm diameter. The moulds were kept aside for 3-4 days for the solidification of soap [4-6].

Table 1: Preparation of Medicated Soap

Ingredients	Formulation (F1)	Formulation (F2)	Formulation (F3)
Clove Oil	2.5 ml	2.5 ml	2.5 ml
Tea Tree Oil	2.5 ml	2.5 ml	2.5 ml
Coconut Oil	35 ml	25 ml	30 ml
Stearic acid	25 ml	35 ml	30 ml
Mogra oil	2 ml	2 ml	2 ml
Sodium lauryl sulfate	15 gm	15 gm	15 gm



Amaranth solution	0.5 ml	0.5 ml	0.5 ml
Glycerin	6.5 ml	6.5 ml	6.5 ml
Sodium hydroxide	30.5 gm	35.5 gm	40.5 gm
Distilled water (q.s.)	100 ml	100 ml	100 ml

2.3 Evaluation Tests

2.3.1. Determination of Organoleptic Characteristics:

Clarity and colour was checked by naked eyes against the white background, and the odour was smelled [5].

2.3.2. Size and shape Determination:

The soap diameter of the size of 8.4 cm, with a thickness of 2.6 cm, which is round-shaped, was chosen for the preparation of soap bars. This was chosen, as this size is ideal in regular usage to apply on the affected skin parts of the body [6].

2.3.3. Thickness determination:

The thickness was determined with the help of a screw gauge which is pre-calibrated. The thickness was measured, by observing the thickness at five different parts of the soap [7].

2.3.4. Weight determination:

The weight was determined by using a Digital weighing balance [8].

2.3.5. Foam Height:

0.5gm of the sample of soap was taken and dispersed in 25 ml of distilled water. Then, transferred it into 100 ml measuring cylinder; the volume was made up to 50 ml with water. 25 strokes were given and stand till aqueous volume was measured up to 50 ml and measured the foam height, above the aqueous volume [9].

2.3.6. Foam Retention:

Prepared the 25 ml of the 1% soap solution and transferred it into the 100 ml measuring cylinder.

Then the cylinder was shaken 10 times. The volume of foam was recorded at one minute for 4 to 5 minutes [10].

2.3.7. pH TEST:

The pH test was performed for all the formulations. Each formulation of soap solution was dissolved in 20ml of distilled water and tested for pH with the help of a digital pH meter. The measurement of pH of all the formulations was done in the previously calibrated pH meter [11].

2.3.8 Alcohol insoluble matter:

5gm of soap was taken in a conical flask and added 50ml warm ethanol and shaken vigorously to dissolve the soap. The solution was filtered through a tarred filter paper with 20ml of warm ethanol and dried at 105 °C for 1hr. The weight of the dried paper with residue was taken [12].

Formula: % Alcohol insoluble matter = $\frac{\text{Wt. of residue}}{\text{wt. of sample}} \times 100$

2.3.9. High-temperature stability:

Liquid soap was allowed to stand at 50°C for 1 week. The stability of liquid soap was observed during this period. The sample which was homogenous and stable liquid after standing was indicated as stable and the sample in which the crystals were roughened and the sample in which precipitation was caused then liquid soap was said to be as unstable [13].

RESULTS AND DISCUSSION

The physicochemical parameters for herbal soap formulations F1, F2 and F3 such as color, appearance, pH were determined. The



formulations have a light pink color with an aromatic odor and had a good appearance as well as the pH was found to be in the range of 7.25-7.45. Healthy skin has a pH of 5.4 to 5.9 and the prepared formulations pH was found to be neutral in nature and doesn't cause any irritation or sensitization to the skin. Other parameters like foam height, foam retention were also performed

and showed good results, the prepared soaps produced good lather i.e. 2.9-3.4 cm and retained on the skin for 3 minutes. Alcohol insoluble matter was also evaluated successfully which was found to be 16-19 %, indicates that the prepared soaps were free from non-soap ingredients and soft soaps were produced which improves the overall quality of the soap (Table 2).

Table 2: Physicochemical Parameters of Herbal Soap Formulations

Parameters	Formulation (F1)	Formulation (F2)	Formulation (F3)
Colour	Baby Pink	Baby Pink	Baby Pink
Odor	Fruity Smell	Fruity Smell	Fruity Smell
Appearance	Good	Good	Good
Shape	Rectangle	Rectangle	Rectangle
Size	9.2 cm x 3.1 cm	9.2 cm x 3.1 cm	9.2 cm x 3.1 cm
pH	7.25	7.31	7.45
Foam Height (cm)	2.7	3.3	3.7
Foam Retention (min)	3.3	3.5	3.7
Alcohol insoluble matter (%)	18.96	19.01	19.37
High temperature stability	>45°C	>45°C	>45°C

CONCLUSION

In the present work, antimicrobial herbal soaps were prepared, with suitable size and shape, thickness, weight, and with good foam producing ability. Herbal soaps of neem and tulsi were prepared for their anti-bacterial activity for the treatment of pimples, acne and scars. Two different formulations F1, F2 and F3 were prepared by cold press method and the formulations were characterized for different evaluation parameters like clarity, color, and odor, size, and shape, thickness, weight, pH in which they exhibited satisfactory results. The herbal soap showed a good appearance with pink color and with a pleasant aromatic smell and showed good anti-bacterial properties. Based on the study it can

be concluded that herbal products can be effectively formulated in the form of medicated herbal soaps by using cold process technique with excellent anti-bacterial properties.

5. Conflict of Interest

None

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