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Formulation and Evaluation of Poly Herbal Soap

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Abstract: *The formulation of herbal soap involves the use of natural plant-based ingredients combined with oils, fats, and alkalis to create a mild, skin-friendly product with therapeutic properties. Herbal soaps are gaining popularity due to their skin benefits, gentle cleansing properties, and fewer chemical additives. This study explores the formulation of herbal soaps using ingredients such as essential oils, herbal extracts, and other natural additives like honey, aloe vera, neem, or turmeric, which provide anti-inflammatory, antioxidant, and antimicrobial benefits. The soap's effectiveness depends on the selection and combination of active herbal ingredients, as well as the production method, typically cold-process or hot-process.*
Nosocomial infection has been recognized as a crucial issue in the outcome of hospital care, with significant morbidity and mortality results. The primary routes of infection transmission to patient are the hands of health-care workers. This also evokes utilization of antiseptics for hand-washing purposes. Many of the antiseptics commercially available are sanitizers dependent on alcohol that have certain shortcomings or harmful effects. The regular use can cause dermal irritation. The aim of the present study was to formulate an herbal soap using leave extracts of all herbal ingredient. catappa, fruits of Curcuma longa, and rinds of Garcinia indica..

Keywords: Herbal soap, formulation, evaluation, saponification, skin care

I. INTRODUCTION

Often referred to as natural soaps, herbal soaps are created using botanical extracts and plant-based components. They provide the skin with a number of benefits because they are composed of natural substances [1].They have several advantages, including their natural scent, antioxidant content, moisturizing and nourishing qualities, and environmental friendliness. The epidermis of the skin, the body's most delicate organ, must be shielded from harmful germs. A major issue with hospital treatment outcomes is nosocomial infections, which increase the risk of mortality and prolong hospital stays [2]. The primary ways that health care workers (HCWs) get exposed to drug-resistant bacteria and serious infections are through their hands [3].

Historically, the plants have been a powerful source of anti-infective compounds. Antimicrobials derived from plants constitute a vast unexplored medical resource. In addition to effectively treating infectious infections, they also lessen a number of the negative effects that synthetic antimicrobials frequentlycause. Almond trees are utilized as a leprosy cure because of their antibacterial, sudorific, and antioxidant properties. Phytochemicals such as tannins, quercetin, and kaempferol are found in these natural sources. Turmeric, or Curcuma longa, is used as a spice, preservative, and coloring agent in addition to its many pharmacological and medical uses. Nematocidal, anti- inflammatory, antibacterial, antioxidant, anti-parasitic, antispasmodic, and anti-carcinogenic properties are among its many properties. Similarly, the rinds of Garcinia indica, often known as kokam, are a rich source of organic acids, including hydroxyl-citric acid and other components that are known to cause cancer. [4]

II. MATERIALS AND METHODS

The preparation of the extract of the Herbal soap is based on Herbal formulation and Evaluation including organoleptic and physic-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.

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Plant Collection

Collection of Neem

The leaves of *Azadirachta indica* (Neem) were collected from new montfort institute of pharmacy garden , after that the leaves were shade dried and coarsely powdered using mortar and pestle

Extraction Process :-

Preparation Of Solvent Extract Extraction of Azadirachta indica

1. Fresh neem leaves are collected and shed dryed for 15 days
2. The dried leaves are then powdered using motar and pestle.
3. The leaves weighed 54.3gm and macerated in a beaker using 280ml distilled water and 120ml chloroform with continuous stirring.
4. The prepared mixture is covered with aluminum foil and allowed to macerate for three days, stirring every day. After that, filter paper is used to filter the mixture.
5. On a hot water bath, the mixture's extra solvent was dried.
6. The dried extract was collected and kept in desiccators for cooling.
7. The prepared extract is weighed.[5]

Collection of Tulsi

The leaves of *Ocimum tenuiflorum* (Tulsi) were collected from collage garden, after that the leaves were shade dried and coarsely powdered using mortar and pestle.

Extraction of Tulsi

1. Fresh tulsi leaves are collected and shed dryed for 15 days.
2. The dried leaves are then powdered using motar and pestle
3. The leaves weighed 4.90gm and macerated in a beaker using 110ml distilled water and 40ml chloroform with continuous stirring.
4. The prepared mixture is covered with aluminum foil and allowed to macerate for three days, stirring every day. After that, filter paper is used to filter the mixture.
5. The excess solvent in the mixture was dried on a hot water bath.
6. The dried extract was collected and kept in desiccator for cooling.
7. The prepared extract is weighed.

Collection of Ritha

The seeds of *Sapindus mukorossi* (Ritha) were collected from botanical garden, after that the seeds were shade dried and using mortar and pestle the seeds were grinded and coarse powder was obtained.

Extraction of Ritha

1. New ritha leaves are gathered, dried for 15 days, and then shed.
2. Next, a pestle and motar are used to ground the dried leaves.
3. The leaves weighed 154.3gm and macerated in a beaker using 840ml distilled water and 360ml chloroform with continuous stirring.
4. The prepared mixture is covered with aluminum foil and allowed to macerate for three days, stirring every day. After that, filter paper is used to filter the mixture.
5. On a hot water bath, the mixture's extra solvent was dried.
6. After drying, the extract was gathered and stored in a desiccator to chill.
7. Weighing the produced extract is done.`[6]

Collection of Aloe Vera: The Fruit pods of Aloe barbadensis (Aloe Vera) were collected from collage garden, after that the fresh Fruit pods were cut into small pieces and Aloe Vera gel were collected by using spatula.

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Collection of Lemon

The Peels of *Citrus limon* (Lemon) were collected from botanical garden, after that the Lemon were cut into two half and squeeze it as hard as possible by using hand.

III. DISCUSSION

Our study's objective is to create herbal soap through the cold method. Lemon, Aloe vera, Tulsi, Neem, and Ritha were used to make herbal soap. Using varying concentrations of the soap solution in comparison to a standard, the herbal formulation was created and assessed for the measurement of pH, moisture content, foaming height, foam retention duration, saponification, TFM (total fatty matter), and alcohol soluble matter.

Ingredient used in herbal soap

Sr.No	Ingredient	category
1.	Soap base	Humectant
2.	Ritha	Soapnut
3.	Tulsi	Antiviral
4.	Neem	Antibacterial
5.	Orange Oil	Citrus
6.	Alovera gel	Moisturising
7.	Vitamin E	Antioxidant
8	Rose Water	Perfuming Agent
9.	Glycerine	Moisturiser

Formulation Of Herbal Soap

Sr.no	Formulation 1	Formulation 2	Formulation 3
1).soap base	1.25 gm	1.5 gm	1.5 gm
2).Ritha	1 gm	1 gm	1 gm
3). Tulsi.	1 gm	1 gm	1.5 gm
4) Neem.	2 gm	2 gm	2 gm
5) Lemon oil	Q. s	Q. s	Q. s
6) Alovera gel	2 gm	2.5 gm	2.5 gm
7) Vitamin E.	Q. s	Q. s	Q. s
8) Rose water	2 ml	2 ml	2.5 ml
9). Glycerine	Q. s	Q. s	Q. s

A mixture of powdered herbs of weight containing 1gm Ritha extract, 1gm Tulsi extract, 2gm Neem extract, Lemon oil(q.s.), 2gm Alovera gel, Vitamin E(q.s.), Rose water 2ml, Glycerine (q.s.) were taken to prepare herbal soap by

Procedure

1. The Soap base (Glycerine) was taken in a beaker and was melted in a hot water bath.
2. Along with the glyceine, the extract of Ritha, Tulsi & Neem was added with Aloevera gel.
3. Then Vitamin E, Rose water and Lemon was also added and stirred continuously to mix the herbal soap ingredients as mentioned above.
4. It was poured in a soap base and cooled for 12 hrs

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Fig:- Herbal Soap

IV. EVALUATION OF HERBAL SOAP

Evaluation of physicochemical parameters of the prepared formulation, various Sphysicochemical parameters which are mentioned below were performed to establish the quality of the prepared formulations.

organoleptic evaluation:-

Colour :-brown

Odour :-orange

Appearance :-Good

Determination of Organoleptic Characteristics:

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

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.

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.

Weight determination:

The weight was determined by using a Digital weighing balance.

Foam Height:

23 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.

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.

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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.pH range about 7.

V. CONCLUSION

The results of the formulation and testing of herbal soap show promise for developing a skin- friendly, natural substitute for traditional soaps. The plant-based components used to make the herbal soap include antibacterial, calming, and moisturizing qualities, among other advantages. The assessment of the herbal soap's physical and chemical characteristics, including pH, texture, and lather quality, showed that it is capable of thoroughly cleansing the skin without irritating or drying it out. Furthermore, adding organic herbs like tulsi, aloe vera, and neem improves its healing qualities and makes it appropriate for a variety of skin types, including sensitive skin. From the choice of ingredients to the finished product, the formulation process turned out to be economical and environmentally friendly. In conclusion, customers looking for skin-friendly and environmentally friendly personal care products should consider herbal soap. To investigate the long-term stability, shelf-life, and wider consumer acceptance of these soaps in the market, more research and testing are advised.[7]

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