


**FORMULATION AND EVALUATION OF POLYHERBAL BRIGHTENING SOAP**

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Article Received on 09/07/2024

Article Revised on 30/07/2024

Article Accepted on 20/08/2024

**ABSTRACT**

**Background:** People are becoming more conscious of the need to attain and preserve good healthy skin. This leads to the construction of antioxidant soaps using intricate synthetic ingredients whose safety for human health and skin is still unknown. **Objective:** The current study aims to prepared and evaluate polyherbal brightening soaps.

**Methods:** To make the polyherbal brightening soaps, *Vinga mungo*, *Solanum tuberosum*, *Aloe barbedensis* and *Curcuma longa* were used. The soaps were then evaluated for colour, smell, pH, skin irritant test, foam retention (Fr), foam height (Fh) and total fatty matter. **Results:** Polyherbal brightening soap the most stable foam with over 3 minutes and 14 seconds foam retention when small amount of soap was dissolved in distilled water. The results of the formulated soaps was stable and can be safely use on the skin. **Conclusion:** The results of the study offer potential alternative to the cosmetic industry in polyherbal brightening soap production.

**KEYWORDS:** Brightening soap, *Vinga mungo*, *Solanum tuberosum* *Aloe barbedensis*, *Curcuma longa*.

**1. INTRODUCTION**

The majority of commercial soaps on the current market contains chemical ingredients that have antibacterial activity and may have depilatory effects on skin infections; the problem is that most people are unaware of the long-term effects of using commercial soaps, which makes people more likely to use herbal formulations. The most common type of fungal infection requires intensive care for both immediate treatment and long-term maintenance of healthy skin.<sup>[1]</sup>

Because they are safer and more effective than products made from chemicals, herbal plants are therefore very important.<sup>[2]</sup> According to the WHO, approximately 80% of Indians, rely on traditional medical systems including ayurveda, unani and siddha for day-to-day health issues.<sup>[3]</sup> The area of the body that is most vulnerable to external infections is the skin.<sup>[4]</sup> As a result, a better and safer product is needed to maintain cleanliness and hygiene with fewer adverse effects, such rashes, redness, itching or any other form of reaction.

Herbal products have minimal adverse effects and are enhanced with vital nutrients and minerals that are beneficial to human health. The phytochemical elements

found in the diverse plant kingdom contribute to the skin's healing, repair and protection in addition to having emollient properties.<sup>[5]</sup> A medicinal product, herbal soap preparation has antimicrobial, anti-aging, antioxidant and antiseptic qualities. Plant parts such as seeds, rhizomes, nuts and pulps are mostly used to treat illness and injuries and promote health. Artificial colours, flavours, fluorides, etc. are not present in herbal soap. In contrast to the ingredients of store-bought soap. Due to their great therapeutic worth, affordability, accessibility and compatibility, herbs are natural items that are typically used in the treatment of nearly all illnesses and skin issues.<sup>[6, 7]</sup> The usage of synthetic ingredients in soap has seriously jeopardized both human and ecological health. Therefore, the polyherbal brightening soap is made with natural ingredients to lessen its negative effects on the environment and enhance public health.

**Ideal Properties of Soap<sup>[8]</sup>**

**Cleansing:** The ability of soap to remove oil and debris from the skin.

**Conditioning:** Emollients and moisturisers in the soap help achieve this.

**Hardness:** Is an essential ingredient in soap because it determines how long it will last.

## 2. MATERIALS AND METHODS

### 2.1 MATERIALS

Collection of active ingredients were collected from different manufacturing units and local market. Rose oil- Allin exporters. *Vigna mungo*, *Solanum tuberosum*, *Aloe barbadensis*, and *Curcuma longa* was collected from the medicinal garden of college of pharmacy, Madurai Medical College, Madurai.

### 2.2. PHARMACOGNOSTICAL PROFILE OF ACTIVE INGREDIENTS

#### 2.2.1 BLACK GRAM



Fig. 1: Black gram.

**Synonym:** black gram, urad bean, urid bean,

**Scientific name:** *Vigna mungo* L.

**Family:** Papilionaceae

**Chemical constituents:** phytic acid, lectins, saponins, tocopherols. Black gram seeds contain about 25% protein and 65% carbohydrates

**Uses:** Natural bleaching agent, Lighten the skin tone, Anti-fungal

#### 2.2.2 POTATO

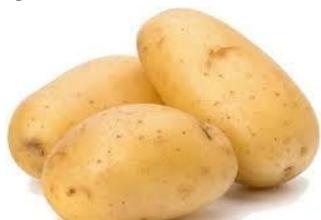


Fig. 2: Potato.

**Synonym:** potato, white potato, white potato vine.

**Scientific name:** *Solanum tuberosum*

**Family:** Solanaceae

**Chemical constituents:** protein, Starch, vitamin C, essential amino acids

**Uses:** Skin Cleanser, Skin, hydration, brightening, soothing and anti-aging properties

#### 2.2.3 TURMERIC



Fig. 3: Turmeric.

**Synonyms:** Haldi, Curcuma, Rhizomacurcumae

**Scientific name:** *Curcuma longa* linn

**Family:** Zingiberaceae

**Chemical constituent:** curcumin, monodesmethoxycurcumin

**Uses:** skin tone, moisturizer. Antibacterial properties, improves skin complexion, brightens the skin, treats dry skin and heals scars.

#### 2.2.4 ALOE VERA



Fig. 4: Aloe vera.

**Synonym:** Ghrit Kumari.

**Scientific name:** *Aloe barbadensis*

**Family:** Liliaceae.

**Chemical constituents:** lignin, vitamin, enzymes, minerals.

**Use:** Anti-Aging

#### 2.2.5 COCOUNT OIL



Fig. 5: Coconut oil.

**Synonym:** coco, coco palm

**Scientific name:** *Cocos Nucifera* L

**Family:** Arecaceae

**Chemical constituents:** Capric acid, caprylic acid, Palmitic acid

**Uses:** Protect skin, Relive Skin Irritation, Moisturize skin, moisturizer, Anti-microbial

#### 2.2.6 ROSE OIL



Fig. 6: Rose oil.

**Synonym:** Attar rose  
**Scientific name:** *Rosa Damascena*  
**Family:** Rosaceae

**Chemical constituents:** Citronellol, linalool  
**Use:** Flavouring agent

## 2.4 FORMULA FOR POLY HERBAL SOAP

Table 1: Formula of Poly herbal soap.

S.NO	INGREDIENTS	QUANTITY	USES
1	<i>Sodium hydroxide</i>	20 gm	Lye
2	<i>Vigna mungo</i>	15 gm	Bleaching agent, Anti-fungal
3	<i>Solanum tuberosum</i>	5 ml	brightening, soothing, and anti-aging
4	<i>Aloe barbadensis</i>	4 gm	Anti-oxidant, Anti-bacterial
5	<i>Curcuma longa</i>	1 gm	Moisturizer, Antibacterial, improves skin complexion
6	<i>Cocos Nucifera</i>	130 ml	Provides hydration, nourishment
7	<i>Rosa Damascena</i>	5 drops	Flavouring agent
8	Distilled water	25 ml	Aqueous vehicle

## PROCEDURE FOR SOAP BASE

**Cold process method:** 75 ml of coconut oil should be put into a 500 ml beaker to prepare the soap base. To develop a solid thickness, place it over a water bath and boil the liquid for 40 to 45 °C while stirring. Use a thermometer to keep the temperature. And maintain the constant level. While add sodium hydroxide, previously which has been weighed, to distilled water in a clean beaker. This solution should be added to the coconut admixture and boiled at 40 to 45 °C until a base consistency is formed. The mixture can then be transferred into soap moulds and kept frozen for 2 to 3 hours. After that, the moulds contain soap can be removed from the freezer and left undisturbed for 5 minutes, at which point soap was formed.

## POLY HERBAL SOAP FORMULATION

### PROCEDURE

Take the required quantity of soap base and put it in a 500 ml beaker. Heat the soap base over a water bath without stirring as to make polyherbal soap. The base for the soap will then be turned into a liquid. And add each component to the mixture mentioned above. To achieve the right mixture, bring the mixture to a boil over a water bath without mixing. Following the pouring of the mixture into the soap moulds, the molds containing the soap were frozen for 2 to 3 hours. The soap will form after 2 to 3 hours if the soap moulds are taken out of the freezer and left for 5 minutes.<sup>[9]</sup>



Fig. 7: Polyherbal brightening soap.

## 3. EVALUATION

**Physical Evaluation:** Physical parameters such as colour and appearance were checked.<sup>[10]</sup>

**Measurement of pH:** PH: 1gm of the soap was dissolved in 10ml of distilled water and the pH was determined using a digital pH.<sup>[11]</sup>

**Foam Height:** A sample of soap weighing 0.5 grams was obtained and mixed with 25 ml of distilled water. After that, pour it into a 100 ml measuring cylinder and add water until the volume reached 50 ml. After 25 strokes, the aqueous volume was measured up to 50 ml, and the foam height was measured above the aqueous volume.<sup>[12]</sup>

**Foam Retention:** A 100 ml graduated measuring cylinder was filled with 25 ml of the 1% soap solution. Top of the measuring cylinder was closed with the palm and shaken for 4 minutes, the volume of foam was measured at one-minute intervals.<sup>[13]</sup>

**Skin irritation test:** It involves applying soap on the skin for 10 minutes. If the skin doesn't get irritated, the product is considered non-irritating.<sup>[14]</sup>

**Determination of total fatty matter:** By estimating the fatty acids that were produced when soap and acid reacted in the presence of hot water, TFM was computed. 150 ml of distilled water was used to dissolve 10 g of the prepared soap, which was then heated. This was heated to produce a clear solution, then 20 ml of 15% H<sub>2</sub>SO<sub>4</sub> was added. The surface fatty acids in the resultant solution are solidified by heating it again and adding 7 g of beeswax. Cake was formed. The cake thus obtained was dried and weighed to determine TFM by the following formula.

% TFM = (Weight of the cake - Weight of the wax) in g/Weight of the soap in g × 100.<sup>[15]</sup>

## 4. RESULT AND DISCUSSION

The Evaluation Tests like colour, odour, appearance, and pH were tested. Remaining such as skin irritation test, foam height and foam retention, Total Fatty Matter,

Moisture Content, were also determined and the results are tabulated.

S.NO	PARAMETERS	RESULT
1	Colour	Greamy white
2	Odour	Aromatic
3	Shape	Oval
4	pH	7.8
5	Foam height	2.8 cm
6	Foam retention	3 min 14 sec
7	Texture	Smooth
8	Washability	Good washable
9	Skin irritation	Non irritant
10	Total fatty matter	67.5 %

#### Determination of Total Fatty Matter

Weight of cake formed = 10.5g

Weight of soap = 10g

Weight of wax = 7g

TFM =  $2.5 \times 7 / 10 \times 100$

= 67.5 %

#### 5. CONCLUSION

The current investigation involves the formulation and testing of polyherbal brightening soap. There, Polyherbal Soap performs exceptionally well. They also lather well and have good cleansing properties. In addition to brightening the skin, the poly herbal soap will shield it from the production of free radicals. The evaluation included physicochemical criteria like colour, smell, shape, pH, moisture content and foam test. The outcome that was utilized to create the formulation for the herbal soap may have economic value. Thus, it can be inferred from the study that poly herbal soap with superior antibacterial properties for skin can be made efficiently. The formulation of the developed polyherbal brightening soap performed well in several tests. By using these soaps, it was established that soap does not irritate skin; hence, this claim is verifiable.

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