



A Research on Formulation and Evaluation of Herbal Soap

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ABSTRACT

Soap is a salt of fatty acids used in a variety of cleansing and lubricating products. In a domestic setting, soaps are usually used for washing, bathing and other types of housekeeping. In industry soaps are used as thickeners, components of some lubricants and precursors to catalysts. When used for cleaning, soap solubilizes particles and grime which can then be separated from the article being cleaned. Where soaps act as surfactants or emulsifying oils enable them to be carried away by water. Soap is created by mixing fats and oils with a base as opposed to detergent which is created by combining chemical compounds in a mixer. Humans have used soap for cleaning for millennia. Evidence exists of the production of soap like materials in around 2800 BC in ancient Babylon.

Keywords: Rebatching , Papaya, Soap , Cleaning

1. INTRODUCTION

Soap is a salt of fatty acids [1] used in a variety of cleansing and lubricating products. In a domestic setting, soaps are usually used for washing, bathing and other types of housekeeping. In industry soaps are used as thickeners, components of some lubricants and precursors to catalysts. When used for cleaning, soap solubilises particles and grime which can then be separated from the article being cleaned. Where soaps act as surfactants or emulsifying [2] oils enable them to be carried away by water.

Soap is created by mixing fats and oils with a base as opposed to detergent which is created by combining chemical compounds in a mixer. Humans have used soap for cleaning for millennia. Evidence exists of the production of soap like materials in around 2800 BC in ancient Babylon.

1.1 Types of Soap:

1.1.1 Solid soap

Solid soap ensures and reassures. This is, essentially, the observation made by traditional soap brands.

Albo group, an Italian company that, since 1977, has been developing collections of soaps for retail and hotels, also using ingredients linked to the territory (chinotto, orange, grapevine, olive oil, etc): essences and fragrances that fully become part of the formulations.

In recent years, the awareness campaigns regarding the respect for the environment and the development, also in Italy, of an eco-sustainable culture have caused, as a result, an increase in solid soap sales and a multiplication of distribution.

Replaced for a long time by liquid soap, the classic solid soap is therefore making a strong comeback in consumers' baskets. A trend that is giving a new vitality to the segment the reasons are mainly 4.

- Consumers have become more wary of the undesirable substances contained in shower gels ask for more authenticity .
- Pay more attention to savings: solid soap lasts longer than liquid soap
- Appreciate the ecological aspect: solid soap does not have plastic packaging
- Are intrigued by novelties: there are, in fact, also high-end solid soaps or soaps manufactured according to the criterion of territoriality (this concept recalls that of local sources).

1.1.2. Liquid soap

Although it has dominated consumption for decades, liquid soap seems destined to lose ground, in terms of consumer preferences. The widespread opinion is that it does not respect the planet enough (due to its plastic packaging) and not even the skin, due to the content of preservatives. Furthermore, there is also an economic aspect: basically, liquid soap lasts half as long as soap bars, and its cost increases together with the crisis of raw materials (mainly

plastic) necessary for its packaging. Lastly, duration is another negative point: liquid soap, in fact, lasts less than solid soap and its properties are diluted in water and, therefore, less effective. These are the reasons why soap bars are back in fashion. A cosmetic has made it a real self-care product, perfect for all uses.

1.1 3. Sulphur soap

Its benefits have long been known. Already in ancient times, it was used to fight skin inflammation and itching. Its composition is based on the ancestral knowledge of plants and their natural benefits. A sworn enemy of acne, it is also indicated in case of eczema and dermatitis, to improve the appearance of the skin and reduce itching.

1.1 4. Marseille soap

It bears the name of the French city where it was born: it is perfect for hands, face and body, but it is also appreciated for cleaning linen and for protection against moths. Marseille soap is known to be free of allergens, making it perfect for the hygiene of children and people with sensitive skin (its bactericidal properties have helped to reduce the infant mortality rate since the 19th century). Its name reflects more a production process than a city of origin. In fact, Marseille soap is made up of at least 72% fats, olive oil, palm oil and coconut oil and is free from animal fats and synthetic additives.

1.1 5. Clay soap

There are over 4 thousand clays in the world. They give soaps a natural colour but, above all, they are rich in active ingredients that have beneficial properties for the skin.

- **Green Clay:** Ideal For Oily Skin. It Has Absorbing And Regulating Properties On Excess Sebum.
- **Pink Clay:** Has Nourishing And Softening Properties. It Is Effective On Irritated Skin Or Scalp.
- **Yellow Clay:** It Is Cleansing And Purifying, Perfect For Skin That Produces Excess Sebum.
- **Brown Clay Or Ghassoul:** It Is Soporiferous Or Purifying Clay. It Is Found Only In Morocco And, For This Reason, It Is Considered Precious.
- **White Clay:** Also Known As **Kaolin**, It Has Fortifying Properties. It Is Ideal For Dry, Sensitive and Atopic Skin.
- **Red Clay:** It Is Rich In Iron And Trace Elements. It Is Perfect For Restoring Brightness.
- **Blue Clay:** It Owes Its Colour To The Content Of Silica And Natural Pigments. It Eliminates Impurities, It Repairs and Soothes Damaged And Irritated Skin.
- **Grey Clay:** Also Called Bentonite, It Absorbs Up To 10 Times Its Weight In Water.

1.1 6. Aleppo soap

Its name derives from its origins: the city of Aleppo, in Syria. It was introduced in Europe starting from the 12th century, at the time of the Crusades. It is a thousand-year old soap that is made using a hot saponification method and specific ingredients (olive oil, vegetable soda and bay leaf oil), added before the drying phase. These peculiarities make Aleppo soap an ideal cleanser for face and body. It is prized for its moisturising and softening properties, but also renowned for its beneficial effects on acne, eczema and psoriasis, scars and stretch marks. It is perfect for cleaning clothing intended for sensitive and reactive skin: applied dry, it soothes insect bites and, if put in closets, it protects clothes from moths.

1.2 METHODS OF SOAP PREPARATION

1.2.1 Melt and Pour the Soap

Technically all handmade soaps are "glycerine soaps". In much commercial soap, all of the extra glycerine (from the cold soaping process) is collected. This is why all handmade soaps are rich in glycerine (because handmade soap manufacturers do not remove glycerine from their soaps). In today's market, the term "glycerine soap" is often used to refer to clear soap. Generally speaking, glycerine is added to pure soaps to create a healthy, moisturizing bar. Glycerine is a moisturizer. Absorbs moisture; theoretically, if you wash with glycerine soap, your skin will be left with a thin layer of glycerine that absorbs moisture. Pure soap base can be purchased in bulk, melted, colored and scented, and put into molds (or used to create soap products to be cut). This type of soap is called "melting and pouring", and the art of melting and pouring is called "soap casting". Drying and pouring soap is becoming increasingly popular because it is easy to use. There are no major safety precautions (other than common sense - don't put your hands in hot soap; don't cut your fingers with a knife, etc. if you used soap casting. Kids can do this. This is the best kind of creativity. You can also make pure soap from scratch. This method includes all aspects of the cold soap making process, but also includes the steps of adding alcohol to increase clarity and mixing glycerine and sugar to remove and improve clarity. This is a dangerous process due to alcohol vapours. If you want to make pure soap (it doesn't melt like melt

and pour - it just pours the soap once), read "Make Pure Soap" by Catherine Failor. This is a great resource for anyone looking to make pure soap from scratch.

1.2.2 Cold Process

It is made by combining fatty acids and sodium hydroxide (caustic soda). Fatty acids are found in almost all oils, from beef liver to olive oil to hemp oil. Recipes to prepare personal endless recipes. The cold soap making process is a combination of art and science. The active ingredient of soap is that part of the lye (sodium hydroxide) and water react with fatty acids, called "saponification". During the saponification process, oil and lye mix and turn into soap; This process takes up to six weeks to complete. The process of making cold soap requires the use of lye and safety equipment such as goggles and gloves. Do not try the cold soap process without checking the process. Cold soap is known for its hard and long-lasting effect. Depending on the oil used, bar soaps can create too much suds (coconut oil has excellent properties), too soft (olive oil is known for its gentle properties), or too moisturizing (extra oily).

1.2.3 Hot Soap Process

There are many types of cold process. The hot soap process is a fun version of the cold process. The simple explanation is that you add all the ingredients to the pot (then place the pot in a warm place like the oven) and stir frequently until the soap reaches its level. Excess water is evaporated and the soap is cooled and ready for use.

1.2.4 Rebatching Soaps

Reformulated soap, also known as French mill soap or triple mill soap is another form of cold process soap making. You do the cold soap process by scraping it, grating it, putting it in a pan, adding a small amount of liquid (water works well) and stirring, it will melt and turn into a paste. You too. Colorants and fragrances were added. This method is often used to preserve aroma or improve the properties of some essential oils.

1. 3. DRUG PROFILE

1.3.1 Papaya

Name - Papaya

Synonym – Papaya, pawpaw, papaw.

Biological source - This is the ripe fruits obtained from plants of species *Carica papaya*. Belonging to family Caricaceae.

Use – Skin whitening, boosting immunity, purifying agent for skin, to treat sunburn and irritation.

1.3.2 Sodium hydroxide

Molecular formula – NaOH

Molecular weight - 40 gm/mol

Use -lye

1. 3. 3 Ethanol

Molecular formula – C₂H₅OH

Molecular weight - 46.07 gm/mol

Use - Soap hardening agent.

1. 3. 4 Coconut oil

Molecular formula – C₃₃H₆₂O₆

Molecular weight – 554.8gm/mol

Use - Moisturizer and lather enhancer



Fig. 1 – Papaya Fruit

1. 3.5 PropyleneglycolMolecular formula – C₃H₈O

Molecular weight – 76.09 gm/mol

Use –Humectant

1. 3. 6 SorbitolMolecular formula –C₆H₁₄O₆

Molecular weight – 182.17 gm/mol

Use - To prevent moisture loss

1. 3. 7 GlycerineMolecular formula – C₃H₈O₃

Molecular weight - 92.09 gm/mol

Use -Solvent

1. 3. 8 WaterMolecular formula – H₂O

Molecular weight - 18.01 gm/mol

Use – Solvent

2. MATERIALS AND METHODS**2.1 Materials**

Sr. No.	Name of Ingredient	Availability
1	Papaya	Market, Bramhapuri .
2	Propylene glycol	<i>Zim Laboratories Nagpur</i>
3	Coconut oil	Market, Bramhapuri
4	NaOH	<i>Zim Laboratories Nagpur</i>
5	Glycerin	<i>Zim Laboratories Nagpur</i>
6	Rose oil	<i>Zim Laboratories Nagpur</i>
7	Ethanol	<i>Zim Laboratories Nagpur</i>
8	Sorbitol	<i>Zim Laboratories Nagpur</i>
9	Water	Pharmaceutics Laboratory

Table no: 1 Name of Ingredient**2.2 Methods****2.2.1 Collection of Papaya fruit**

The fully ripped fruit of *Carica papaya* was taken from local plant of *Carica papaya*.

2.2.2 Preparation of Papaya juice

Papaya fruit was cut into pieces and then after removing its seeds, blended until liquid appears in a blender. Fine juice of papaya was filtered through muslin cloth. The filtrate was then taken in beaker and concentrated on water bath with heating. Concentrated product is kept in well closed container for further use.

2.2.3 Preparation of soap base

Glycerin and water was mixed together in a beaker. Sodium hydroxide was added in the solution slowly with constant stirring. Coconut oil was added in the solution and was kept aside for 10 minutes. Further, propylene glycol and clear solution of 70% sorbitol solution was added to it. After all additions get over, ethanol was added in above solution the rose oil was added Perfuming agent in the mixture the solution was solidified after some time. This was used as soap base.

Sr. No	Ingredients	F1	F2	F3	F4	Uses
1	Papaya	55 ml	50 ml	45 ml	40 ml	Active Ingredient
2	NaOH	20 gm	20 gm	20 gm	20 gm	Lye
3	Coconut Oil	50 ml	50 ml	50 ml	50 ml	Lather Enhancer
4	Propylene Glycol	30 ml	30 ml	30 ml	30 ml	Humectant
5	Sorbitol	25 ml	25 ml	25 ml	25 ml	To Prevent Moisture Loss
6	Ethanol	20 ml	20 ml	20 ml	20 ml	For Hardening Of Soap Cake
7	Rose Oil	q.s.	q.s.	q.s.	q.s.	Perfume
8	Glycerin	20 ml	20 ml	20 ml	20 ml	Solvent
9	Distilled Water	20 ml	20 ml	20 ml	20 ml	Solvent

Table no. 2: Formulation of soap Composition of Papaya soap

3. PROCEDURE

The base formulation was prepared in the four batches as per the procedure given above and quantities mentioned in the table no.2 and the solidified base was melted for further addition. Keeping the solution mixture in water bath, the papaya juice was added in every batch so as quantities with respect of 55 ml, 50 ml, 45 ml and 40 ml in each of the batch and mixed with constant stirring. Some drops of rose oil were again added in this mixture to produce a good smell. The molds were lubricated with the glycerin (white petroleum jelly can also used here). The solution was poured immediately in the molds and kept in refrigerator (ice bath) for few hours then the soaps were removed from the molds after getting solidified.

4. EVALUATION TESTS FOR SOAP

4.1. Physical parameters:

- **Colour:**

The formulated soap formulations **F1**, **F2**, **F3**, and **F4** were visually evaluated for colour test.

- **Consistency:**

The formulated soap formulations **F1**, **F2**, **F3**, and **F4** were visually evaluated for their consistency.

4.2 Determination of pH of soap:

The pH of soap was determined by the pH meter.

4.3 Foam formation:

Cylinder shake method was used for determining foaming ability. Soap solution was put into a 250 ml graduated measuring cylinder and was shaken for 10 times. The total volume of foam content was recorded after 1 minute shaking.

4.4 Stability test:

The optimized formulation was subjected for stability study by keeping at room temperature for period of 7 days. After 7 days, parameters of evaluation such as pH, foam formation, irritancy test and organoleptic properties were studied.

5. RESULT AND DISCUSSION

5.1 Collection Of Plant Material:

The fresh fruit of *Carica papaya* was collected from local market of Bramhapuri city.

5.2 Preparation Of Juice:

Accurately weighed 250 gm of Papaya was blended in a blender. Using the muslin cloth, the juice was filtered and 200 ml of juice was used for the formulation of soap.

5.3 Preparation Of Soap:

Total four formulations (F1 - F4) were prepared by cold process method



Fig 2 : Formulations F1



Fig 4 : Formulations F3



Fig 3: Formulations F2



Fig 5 : Formulations F4

6. EVALUATION OF PREPARED PAPAYA SOAP:

The aim of present work is to prepare soap by using Papaya as active agent. The prepared soap was evaluated for physical appearance/visual inspection, pH, foam formation and stability test.

6.1 Physical appearance/visual inspection:

The prepared formulations (F1 – F4) were appeared yellow and yellowish brown in color.

6.2 Determination of pH:

The standard value of pH of soap is slightly alkaline in nature. The pH of all formulations (F1-F4) was found to be as follows,

6.3 Foam formation:

Cylinder shake method was used to determine foaming ability of all formulations.

Sr. No.	Parameters	F1	F2	F3	F4
1	pH	7.1 ± 0.1	7.3 ± 0.1	7.3 ± 0.1	7.4 ± 0.1
2	Foam formation	151 ± 3.5	156 ± 3.5	163 ± 3.5	170 ± 3.5

Formulation **F4** was optimized formulation based on the evaluation parameters like pH, foam formation and physical parameters. The results showed that the formulation F4 of Papaya soap contains all Good characters of an ideal soap. As per literature review of *Carica papaya* having skin whitening activity, so prepared formulation will also is used as skin whitening soap.

7. CONCLUSION

In the present work, efforts have been made to prepare and evaluate papaya soap by using *Carica papaya*. A soap preparation was formulated based upon traditional knowledge and emphasis was to formulate stable and functionally effective soap.

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10. ABBREVIATIONS

cm: Centimetre.

F1 : Formulation 1.

F2 : Formulation 2

F3 : Formulation 3

F4 : Formulation 4

gm: Gram

ml: Milligram

mm: Millimetre

um: Micrometer

Qty: Quantity.

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