

Soap production using a mixture of moringua leaves and olive oil

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Abstract We don't know exactly the beginning of this old industry but it is certain that soap manufactory has an old story. Of clay Sumeriêrs paintings dating before 2000 BC describing their activities already mentioned the use of a kind of "soap paste."

In the eighth century, soap production was introduced in Spain and Italy. In the ninth century, soap based on olive oil was developed in France and more specifically in Marseille.

Moringa oleifera, often referred to simply as *Moringa*, is a species of small tree that can grow up to 10 m of the family *Moringaceae*. In the Sahel, *Moringa oleifera* leaves are eaten as vegetables and those of *Moringa stenopetala* are the basic meal of the Konso people in Ethiopia. Nutritional analysis showed that *Moringa oleifera* leaves are richer in vitamins, minerals and protein than most vegetables. They contain as much potassium as bananas.

Our study is devoted to the preparation of soap from a mixture of *Moringua* leaves and olive oil with soda. The results found show that we can prepare soap using leaves of *Moringua* (rich in potassium) olive oil and soda with good properties (foaming, emulsifying, wetting and detergent).

Key Words: Soap, *Moringua* leaves, Industry of Soap, Olive oil, Saponification

Introduction

The first recorded evidence of the manufacture of soap like materials dates back to around 2800 BC in Ancient Babylon. Babylonians discovered the basic method of making soap (fats boiled with ashes and water). Soap was used mostly in the textile industry.

The Ebers papyrus (Egypt, 1550 BC) describe how animal and vegetable oils were mixed with alkaline salts to produce a soap as substance and mention that soap was used for threatening sores, skin diseases as well as washing.

Arabic chemists were the first one to produce soap made from vegetable oils (such as olive oil), aromatic oils (such as thyme oil) and lye. From the beginning of the 7th century, soap was produced in Nablus, Kufa and Basra. They made perfumed and colored soap, some of the soaps were liquid and others were solid. They also made special soap for shaving. [1,2]

Saponification literally means "soap making" from the root word, "sapo", which is Latin for soap.

This work consists in the study of the soap production using a mixture of *Moringa* leaves and olive oil at the laboratory scale, then the property of our obtained product (foaming, emulsifying wetting powers and detergent).

Material and Methods

Saponification is the chemical reaction that occurs when fats or oils (fatty acids) come into contact with lye (a base). The by-products of the saponification reaction are glycerin and soap." (figure1)

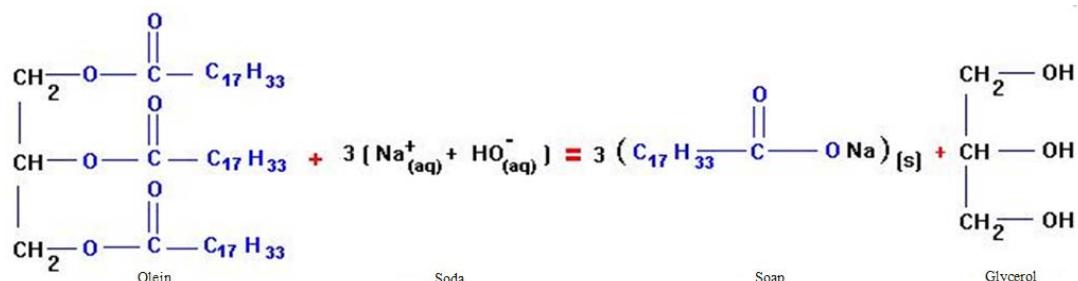


Figure 1: Overall reaction of Saponification.

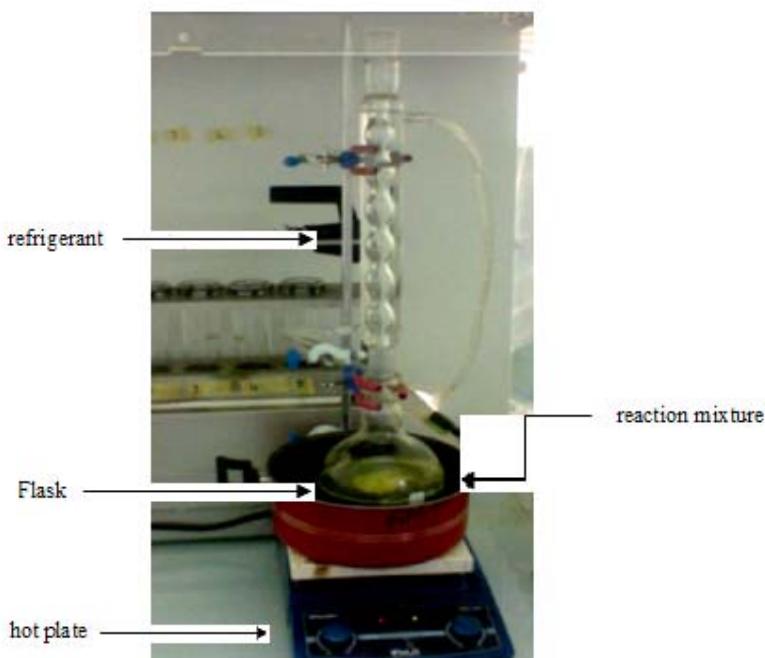


Figure 2: Saponification setup

A soda quantum was added to the mixture of *Moringa* leaves and olive oil then they were heated to boiling with continuous stirring (figure 2). On the other hand a salt solution was prepared with high concentration of NaCl. When 30 minutes have elapsed the mixture was poured into brine. It was stirred and the precipitate was collected after vacuum filtration.

The soap was washed profusely with cold distilled water then weighed before and after drying

Propriety of our Product has been studied using test tubes;

1-Solubility and foaming power: Using a few quantum of *Moringa* soap and distilled water.

2- Emulsifying power: tested with mixture of quantum of *Moringa* soap and vegetal oil.

3-wetting power and detergent: with mixing of soap solution and CaCl_2 in test tube.

Results and Discussion

The soap of *Moringa* leaves and olive oil mixture has been obtained after saponification reaction with soda (figure 3). It has been with green color and alkaline pH which need a rinsing with good quantum of distilled water to obtain a neutral pH.



(a)



(b)

Figure 3: Obtained soap; (a) before drying, (b) after drying.

Tests of propriety of *Moringa* soap showed good results;

1-Solubility and foaming power

2- emulsifying power

3-wetting power and detergent



(a) pH value after rinsing with distilled water



(b) foaming, emulsifying wetting and detergent properties

Figure 4: Properties of obtained *Moringa* soap.

Conclusion

This study showed that we can make a natural soap using a mixture of *Moringua* leaves rich with K and olive oil in presence of soda. It was a good soap with good properties (foaming, emulsifying, wetting and detergent).

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