

## Natural Laurel Soap

Tahsin ÖZER<sup>1,\*</sup> , Fatma Zehra SERT<sup>2</sup>, Ali İhsan ÖZTÜRK<sup>2</sup>

<sup>1</sup> *Osmaniye Korkut Ata University Bahçe Vocational School, Bahçe, Osmaniye, Turkey*

<sup>2</sup> *Osmaniye Korkut Ata University Faculty of Arts and Sciences, Chemistry Osmaniye, Turkey*

\**tahsinozer@osmaniye.edu.tr*

### Abstract

Food and cleaning products are the most basic living materials. Soap is a cleaning agent. The first known record of the production of soap, belong the Sumerians in BC 2500 years. Soap making has been developed and has survived to the present day. The products of olive and laurel plants are used in the construction of natural laurel soap. Olive and daphne are typical plants of the Mediterranean climate. Olive is among the first plants to be tamed. The laurel plant grows naturally in the Mediterranean climate. The laurel plant is not cultured. The construction of the natural laurel soap used today is transferred to the literature and presented to interest of the researchers and developers.

**Keywords:** Soap, laurel soap, olive, daphne.

## Doğal Defne Sabunu

### Özet

Gıda ve temizlik ürünleri en temel yaşam malzemeleridir. Sabun bir temizlik maddesidir. Sabun yapımı ile ilgili bilinen ilk kayıt, M.Ö. 2500 yıllarında Sümerlere aittir. Sabun yapımı geliştirilerek günümüze kadar gelmiştir. Doğal defne sabunun yapımında zeytin ve defne bitkisinin ürünleri kullanılmaktadır. Zeytin ve defne Akdeniz ikliminin tipik bitkilerindendir. Zeytin, evcilleştirilen ilk bitkiler arasında yer almaktadır. Defne bitkisi Akdeniz ikliminde doğal olarak yetişmektedir. Kültürü yapılmamaktadır. Günümüzde kullanılan doğal defne sabunu yapımı literatüre aktarılarak araştırmacı ve geliştiricilerin ilgisine sunulmuştur.

**Anahtar kelimeler:** Sabun, defne sabunu, yağ, defne.

### 1. INTRODUCTION

Food and cleaning products have always been indispensable for humanity. They have always been in search of new products to provide them. He always tried to get better and more functional product. New inventions may lead to the development of new products or the transfer of the acquired knowledge to the future. With the invention of writing, this transfer was easier and more permanent.

One of the most basic living products is soap. B.C. In the 2500 years of the Sumerian tablets, there were articles related to soap making. Teutons after Christ; oil and  $K_2CO_3$  (tree and moss ash) were able to produce soap [1]. Teuton soap has become a popular export material and has been used as hair dye and ointment in Rome. A.D. In the IIth century the Roman imperial physician Galen introduced the soap to the Romans as a means of washing and cleaning. A.D. In 385, Theodorus Priscianus recommended the use of soap for hair wash. Muslim chemists in the golden ages of Islam; adding ash to liquid oil such as olive oil and aromatic oil such as oregano oil by produced the actual soap. Soap was produced in Palestine (Nablus), Iraq (Kufa) and Basra since the beginning of the seventh century. These soap recipes have remained unchanged until today. Arab soaps have been colored and enriched by adding perfume. Some of the soaps are liquid and some are solid. Al-Razi, a Moroccan chemist, gave a detailed description of the soap in the 13th century. Sesame oil, potash, alkali and some lime are mixed and boiled. After cooking, pour into molds and dried. Thus, solid soap is obtained. XIII. Towards the end of the century, household soap making was developed during the Charlemagne Empire and soap making in the empire countries had been a popular job. In the IXth century, the Spanish people spreaded the art of soap making in the coasts of the Mediterranean, especially in Marseille, Venice and Genoa [2].

XIII. It was known as a mechanical mixture of soap, oil and alkaline until the turn of the century. Later, French chemist Chevreul showed that soap formed by a chemical reaction [3].

Antakya bay soaps are being made for centuries. Soap making has been translated from tongue to tongue, from generation to generation. Current knowledge has been transferred to the literature. This knowledge can be developed by other researchers.

## 2. THE SOAP

Products obtained as a result of the reaction of vegetable and animal fats or fatty acids with alkali hydroxides and used as cleansers are called soap. According to the consistency of soap, hard and soft soaps are divided into two. Hard soaps are sodium salts of saturated fatty acids. For this purpose, lauric, myristic, palmitic and stearic acids or salts containing these acids are used. Soft soaps are the potassium salts of unsaturated fatty acids. Sunflower oil containing linoleic and linolenic acid is used in the construction.

Soap and water are used as cleaning agents. Only water is a weak cleaner. Polar water molecules are connected to each other by hydrogen bridges, so they cannot affect the apolar surface formed by the oil molecules. Cleaning effect of soap molecules; wetting, dispersing impurities, emulsifying and absorption molecules are due to the long apolar alkyl chain and polar end. Soap is easily soluble in water. When a small amount of soap is dissolved in water, soap molecules form a monomolecular layer on the water surface. In this layer, the apolar part of the molecule settles on the surface of the water while the polar end is directed towards the water. This positioning of the molecules facilitates foaming by reducing the surface tension of the water. Therefore, as the concentration of soap molecules increases and the surface becomes saturated, the soap molecules are grouped to form colloidal particles. These particles, known as micelles, form apolar media in aqueous solution. The apolar side of the micelles attracts the fat molecules and the polar side water molecules. In this way, a durable emulsion is formed from water and oil molecules and removed from the surface [4].

## 3. THE OIL

### 3.1 The Olive Oil

Olive trees; winters are temperate and rainy, the autumn is cool and partly rainy, the summers are dry, under the sea climate and without entering much more, grows near the beach [5]. Olive is a Mediterranean plant. Where climatic conditions are appropriate, they do not show much selectivity in terms of soil quality. They can be grown here [6].

Olive oil is produced by squeezing the ripe fruits of the olive tree. They are liquid at room temperature. Used as cooking oil. Calorie value is high. It is the source of fatty acids. It is also the depot of Fat-soluble A, D, E, K vitamins are store. Olive oil has a unique taste and smell. It is an important oil which can be consumed naturally and preferred to other oils with this feature [7].

The extraction of olive oil has been one of the most important occupations of humanity since the early ages. Mankind investigated ways and means of extracting more fat from olive fruit. Many tools and machines have been developed over time. By using methods similar to the techniques in which grape was crushed, the plants such as flaxseed, juniper seed, sesame and almond were crushed, and oil was extracted. In other words, the tools and methods developed for each of these products facilitated the processing of other plants. It is clear that the same tool facilitates the processing of more than one plant. In a recent history of Anatolia; In the stone presses, which are used jointly by people living in many villages, have crushed their wheat and crushed olive fruits in these stone presses [8]. Oil extracted from olive fruit was used for lighting at first, then; has been a tool to beautify her hair and skin. In the end, it was crowned in the kitchen.

Olive has taken its place everywhere in every stage of human life. There is no consensus between historians, archaeologists and archaeo botanists about the age of the wild olive tree, which is so important in human life, and where the homeland is [9].

### 3.2 The Laurel Oil

Maki flora, which grows in the Mediterranean region. It is a perennial, evergreen plant. Since ancient times in the Mediterranean coast, were grown as decorative trees in gardens and parks. It grows in Turkey, Marmara, Aegean and Mediterranean regions in small groups of up to 700 meters height as forest areas. It is also seen in some parts of the Black Sea region [10]. The laurel has a chickpea-sized, black-colored, and olive-like fruit. Although the outer part of the seed grains is thin, it is quite oily.

Leaves, fruit and essential oils; used in perfumery, pharmacology and food technology. Dried leaves are often used in canned and as seasoned. Laurel extract is used in medicine, liquor industry, dermatology and rheumatism drugs [11].

Laurel oil is used in perfumed soap making, food, drink, medicine, chemistry and cosmetics industry. Laurel soaps have good cleansing and healing properties of pimples. It softens hair and shows anticepressive effect. Due to these properties, it is used for the treatment for hair treatment, body rash and eczema [10].

Laurel oil is used in perfumed soap making, food, drink, medicine, chemistry and cosmetics industry. Laurel soaps have good cleansing and healing properties of pimples. It softens the hair and acts as an anti-dandruff. Because of these properties, it is used in the treatment of hair, body rash and eczema [12].

Black grains (fruits) formed in the laurel tree are collected. Specially cooked in large boilers. The cooked fruits are crushed under the strainer and the water and oil are filtered. The filtered water and oil are re-boiled. After the boil is boiled, the boiler is left to rest. Thus, when the water collapses, the oil remains on the surface. The oil on the surface is collected.

The laurel oils obtained from laurel fruits are mostly used in soap industry. The obtained laurel oil is mixed with olive oil in the ratio of 1/4 and 2/5 and soap is produced. Soaps from laurel oil are like oleum soaps. Therefore, they melt easily in water and give plenty of foam [13].

### 3.3 Olive Oil Laurel Soap Making

Traditional laurel soaps are made from the oil of the seed of the laurel plant, olive oil, clay water, rock salt and water. Synthetic and dyestuffs are not used in the production of soaps. The laurel soaps are a historic soap produced in accordance with the traditional formulation and production techniques. Production of this soap by conventional method;

The olive oil brought to the soap households is drained into the wells here. If it is brought as olive fruits and not as olive oil, squeeze and oil is extract. The extracted oils are taken into the wells. The oil in the wells, ie under the ground, will be filled in the cooking pots by pulling them when they are being processed. The cooking boilers are made of iron and are in the form of a truncated cone. The cooker section is under the floor. The chimney rises to the top of the roof. Thus, the smoke of the furnace will be thrown out. In order to prevent the overflow during cooking, the boiler is not fully filled, so it is left a little lacking. Olive oil begins to boil in about two hours. After the olive oil begins to boil, add 14% laurel oil and 11% water. Then the cooker is closed. Cooker is left to rest until the next day.

On the second day, the soap still did not lose its warmth and fluency. The soap is poured into a cylindrical mixer (plateau) by pulling it with the long handle buckets (savata). In order to mix all the soap in the cooking boilers, the plateau should be filled 6-7 times. At each filling, 17% laurel oil is added to the mixture. After mixing of the soap, the buckets (satı) are poured into molds. Soap is pulled up from a rectangular space in the center of the tonnage on the ground floor to be transferred to the molds upstairs. The soap poured into the molds is brought to an average thickness of 5 cm by flattening. Soap, which is at the bottom of the boiler, is taken with the savata, which cavities with holes in the base, and the water is kept in the boiler. This slurry is filled into the cans from the valves at the bottom of the boiler.

On the third day, when the olive oil is filled in the boiler, the soap production process starts again. until the olive oil boils; the solidified soap in the upper floor molds is cut. The soap in the molds is cut longitudinally and transversely with the special soap knife. After the cutting process is complete, the soap is stamped with the seal of the soap households. The soaps collected by sealing are stacked on top of each other a shaped truncated cone. Soaps are now ready for sale. The soap crumbs in the molds are evaluated by pouring into the boiling olive oil [14].

### 3.4. Antakya Laurel Soap Production Using Caustic

In making this soap; There are two methods used to be dry and aqueous system. Optionally, olive oil and laurel oil ratios are selected. These rates are as follows;

25% laurel oil 75% olive oil

30% laurel oil 70% olive oil

50% laurel oil 50% olive oil

Of these ratios, the most used and preferred is 25% laurel oil and 75% olive oil. As the laurel oil ratio increases, the soap dissolves quickly.[14].

#### 3.4.1 Dry system

First, olive oil is placed in the boiler (tin, barrel) in preferred proportions. After the olive oil in the boiler is warmed up to burn the hand, laurel oil is added to it. Olive and laurel oil continue to be heated. In a separate bowl 1/6 ratio of caustic solution is prepared. 1/6 ratio, one caustic and six indicates the fat content. Water is added to the system as much as the caustic solution. The caustic solution is slowly added onto the heated olive-laurel oil mixture. If the caustic solution suddenly enters the boiler quickly, it will swell and overflow. The stick used to mix the boiler is called "mahlek". While the caustic solution is added to the boiler, the boiler is mixed with mahlek. After the addition of this caustic solution, the foams accumulate on the boiler. Soap is poured into molds and is expected to freeze. Soap, which is cut to dryness in the molds, is cut into molds with special soap knife. The cut soaps are sealed and packaged after final drying [14].

#### 3.4.2 Aqueous system

First, the olive-laurel oil mixture as much water, put into the boiler. For example, if there is 40 kg of oil, 40 kg of water is added. The water in the boiler is boiled. First olive oil and later laurel oil are added to the boiling water. The olive-laurel oil and water mixture are continued to boil. In a separate container, caustic solution is prepared in a 1/6 to 1/10 ratio. The prepared caustic solution is slowly

added into the boiling mixture. If this mixture overflows add water. If it is incomplete, caustic solution is added. The caustic solution is added until the container used for mixing the soap there is no oil smear or glare. In this system, the soap material (caustic, olive-laurel oil mixture) is collected in the upper part of the boiler. The water is collected at the bottom of the boiler. The supernatant is discharged into molds by taking a container. The soap discharged into the molds is left to dry for 2- 6 hours. At the end of this period the soap is cut. Cut soaps are packed and sold as in dry system [14].

#### 4. RESULTS AND DISCUSSION

B.C. In the 2500 years of Sumerian tablets, there were records of soap making. Soap making has been transferred from tongue to tongue, from generation to generation and has been developed to the present day. Nowadays, by using the products of olive and laurel plants, natural laurel soap is made by adhering to the traditional method.

The soap production process starts with the collection of olive fruit and laurel seeds. In this process, the fats are extracted first. Soap contains 66% laurel oil and 33% olive oil. In other words, 25 kg olive oil corresponds to 50 kg laurel oil. 2 kg rock salt is used in soap making. 50 liters of water is used to wash the soap during the cooking process. Oak ash and clay soil water are used to ensure saponification. The saponification process can also be done with caustic. The cooking time of the soap takes approximately four hours.

Some water is boiled in the boiler for soap making. The ash water (Figure 1-a) is added to the boiling water using scales. Then all of the olive oil is added, and the mixture is boiled. The color of olive oil instantly turns into a sweet green color. Ash and clay water are added to the boiler at different time intervals. The olive oil, which begins to soap, begins to be swelling and begins to produce large bubbles. In order to remove the harmful substances in the soap and reduce the temperature of the oil, water is sprinkled on the soaped oil. To maintain saponification, heat must be kept at a certain level. To keep the heat at a certain level, the boiler is quenched and re-burned. The laurel oil is slowly added to the olive oil soap, which starts to solidify (Figure 1-b). The color of the soap is now darker green. Add all of the rock salt to the boiling soap for a while. Rock salt makes the soap harden. It prevents dusting like powdered sugar on drying process. If too much salt is added, it will harden the soap very well and prevent good foaming. Therefore, it is necessary to pay attention to the amount of salt involved in the mixture.



Figure 1: The ash water (a), saponification of oil with ash water (b).

After the baking process is completed, all the soap filled into the buckets is poured equally into the molds, and the soap is molded to dry (Figure 2). Mold in which soap is poured; fixed height, nylon

coated and made of wood or iron profile. Soap poured into molds is flattened with a trowel. So, the soap is leveled. In other words, the height of the soaps is equalized (Figure 3).



Figure 2. Pouring the soap paste into molds and leaving it to dry.



Figure 3. Drying of soap in molds with fixed height and nylon coated [14].

The soap spilling in the mold is hardened in about 48 hours. Hardened soap is ready for cutting. Hardened soap is cut to transverse and longitudinal with the help of soap cutting knife prepared according to certain dimensions. Cut soaps are reversed. The cut soaps are sealed with the seal of the manufacturer. Since the top of the soap is harder, the soft and glossy bottom part is preferred for text and logo. The seal can be made of metal, as well as from the wood. It is preferable to use wooden seal because it is suitable for traditional forms. Sealed soap molds are removed from each other and turned sideways. It is allowed to dry (Figure 4). Drying process is quite tedious. Once a week, soaps are reversed.



Figure 4. Drying of cut and sealed soaps.

Completely hardened soaps are stacked in towers where they are left to the final drying (Figure 5). Drying time is 6 - 8 months. The elongation and shortening of this time depend on the season in which the soap is cooked. Soaps that are finished to dry are put in special stitched bags. Telis bag allows soap to breathe and does not make perspiration. Finally, the pouches are labeled with labels containing the manufacturing information. Now the soap is ready for consumption.



Figure 5. Final drying of soaps sorted like a tower [14].

The laurel soap has a color close to the cream color, not lush. Weight varies depending on the drying time. Also laurel soap does not contain a very sharp laurel smell [14].

The use of natural products is an alternative to the negative effects of unnatural synthetic and chemicals. The construction of natural laurel soap made by traditional methods was transferred to the literature and presented to the researchers and developers.

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