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RESEARCH TITLE

STUDY OF THE PREPARATION OF SOAP PREPARED FROM OILS DIFFERENT

Muhannad Abdel Salam Osman[1]

[1] Teacher at Nineveh Education, Mosul, Iraq.

Email: mohothmn@gmail.com

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Abstract

The fatty substance is the main axis on which the soap industry is based, as it consists of glycerides and non- glycerides, which are considered Impurities in the fatty substance. A variety of fats can be used such as palm oil, palm kernel oil, coconut oil or olive oil, And fatty acids are the main component that consists of fats, so the choice of fats in the production of soap is very important. The distribution of saturated and unsaturated fatty acids determines hardness, aroma, cleansing, and energy, The foam and the ability to moisturize the soap, and the properties of the resulting soap are also affected by the additives or fillers used.

عنوان البحث

دراسة تحضير الصابون من الزيوت المختلفة

مهند عبد السلام عثمان[1]

[1] مدرس بتربية نينوى، الموصل،العراق.

البريد الإلكتروني mohothmn@gmail.com :

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المستخلص

تعتبر المادة الدسمة هي المحور الأساسي الذي تقوم عليه صناعة الصابون، حيث تتكون من مواد كليسريدية وأخرى غير كليسريدية، والتي تعتبر الشوائب في المادة الدسمة. يمكن استخدام مجموعة متنوعة من الدهون، مثل زيت النخيل، زيت بذور النخيل، زيت جوز الهند أو زيت الزيتون، والأحماض الدهنية هي المكون الرئيسي الذي يتكون من الدهون لذلك فإن اختيار الدهون في إنتاج الصابون مهم جدا. ان توزيع الأحماض الدهنية المشبعة وغير المشبعة يحدد الصلابة والرائحة والتطهير والطاقة، والرغوة والقدرة على ترطيب الصابون، كما ان خصائص الصابون الناتج تتأثر ايضاً بالمضافات او الحشوات المستخدمة.

A brief history of the soap industry:

Through out history, people have been known to have bathed in herbal waters and other additions to their bathing medium that were believed to be beneficial.

Cleopatra of Egypt, for example, used mare's milk, honey, and essential oils in her bathing rituals. Historical studies revealed that soap was used in both ancient Egypt and Babylon 5,000 years ago. A mixture of animal fats and alkali plant ashes was used to produce soap[(1)].

It is believed that ancient peoples used wood ashes and water to wash and get rid of irritation caused by grease or oil, in the first century AD. Pliny describes a soap of tallow and wood ash used by Germanic tribes to lighten their hair. It is recorded that the Babylonians were using Makange soap round 2800 BC, and the soap was known to the Phoenicians around 600 BC.

These early references had a role in soap making. From long ago to ancient civilizations until today, the basics of soap making have not changed, which means that the basic process has not changed, hence the blending of ancient traditions with modern knowledge and the combination of well- chosen and well- chosen ingredients that are blended and stirred at the right temperature and time. Experimenting with the best soaps can result [(2)].

Soap was made mainly from animal fats and alkali obtained from beech trees, Then the French came up with a way to make soap from olive oil, and then this industry grew rapidly in England, where the chemist Karl and Shell accidentally discovered glycerin by boiling olive oil and then add lead oxide[(3)].

After knowing the nature of the fats and oils used in the soap industry, chemists contributed to the The quality of soap improved dramatically in the fourteenth century AD. Coincidence enabled Carl and Shell, the scientist Chevrol, in the year (1823 AD) to discover that simple fats do not interact with alkalis to produce soap directly, but rather decompose first to form acids. fatty and glycerin,

Then there was a revolution in the soap industry when the scientist Nicholas LeBlanc came up with a way to get soap Sodium carbonate or soda with regular salt[(4)].

Materials needed in the soap industry:

Soap making became a chore after sodium hydroxide became commercially available, Soap consists of the reaction of an acid and a base (solution of sodium hydroxide) producing salt. Soap, water, and glycerine. This process is called saponification. Practically any kind of fat or oil can be turned into soap by reacting it with a water baseIn its simplest form [(5)],

Both vegetable oils and animal fats are composed of triglycerides, which are molecules of glycerine which are esterified to three long- chain carboxylic acids (L- chain fatty acids). When a triglyceride is combined with an aqueous base such as sodium hydroxide or potassium hydroxide, the hydrolysis of the triglyceride esters occurs, resulting in a soap containing free fatty acid salts and glycerin. It is the salts of fatty acids that give soap its distinctive properties.

In making toilet soap, the materials used are oils such as olive, canola, marula, coconut, lard, and other ingredients such as avocado, titanium dioxide, and milk [(6)].

Soap is obtained directly from the chemical reactions of vegetable and animal oils Chemical reactions of the fatty acids obtained from these oils with Alkaline Hydroxides [(7,8)].

Animal Fats:

Tallow is one of the main fatty materials used in soap making, The Romans were making Soap made from animal fat and wood ash 2,500 years ago. Soap made from animal fats

contains more than 16 and 18 fatty acids carbonate, and is usually more difficult to form [9].

1-3 Animal Fats as raw materials for soap making:

Soap making was one of the wonderful discoveries,and most likely accidental, The prevailing story goes that in days gone by, on Mount Sapo in Rome, animals were burned as offerings to the Gods, and after the ceremonies The fire pits were filled with ash and animal fat,

when it rained the water ran through the ashes and fat thus drawing them up to the river, and when the Roman women took their clothes to the river, they found lumps of a pale waxy substance floating On the water, the women soaked their clothes and washed them by hitting them with stones. When the waxy substance hit the clothes, it made foam and the clothes became cleaner. In the end, the process of making soap from the animal fat began [10].

Fatty Acids:

Fatty acids (FAS) and free fatty acids (FFAS) are non- volatile aliphatic monocarboxylic compounds, which are one of the most important constituents of lipids and can also be identified as a base for soap. Fatty acids are widely found in nature, and their physical properties have been studied in An attempt to find the fastest and most accurate way to use it [11].

However, no data on the diagnosis and determination of free fatty acids have been published by gas chromatography and mass spectrometry (GC- MS). On the other hand, some methods are applied for the determination of total fatty acids, natural oils, volatile matter, moisture, residual solvents, and metals in detergents [12,13].

The volatile fatty substances are hydrolyzed to obtain free fatty acids as raw materials, and hydrolysis is a reaction to decompose triglycerides using water as a reagent to obtain free fatty acids [14].

The quality of the soap depends on the composition of the manufactured fatty acids, which means that the saturated free fatty acids give light, solid open foam bubbles and a solid consistency. While the free unsaturated fatty acids provide moisturizing, conditioning and nourishing properties [15].

Biological fatty acids, which are in their free form, also play an important role in the quality of soap, and the presence of these compounds is important in the higher quality of detergents. Soaps with free fatty acids are more valuable in higher emollients, better lathering and these characteristics are indicative of the quality of the soap [16,17].

The obtained saturated fatty acids are non- volatile compounds with high polarity, due to the fact that soap has a complex nature, and its analysis represents a difficult problem. therefore Derivatization is essential to increase the thermal stability of volatiles and thus improve the gas chromatography properties of the analytes by reducing their polarity [18].

Types of oils used in soap making:

Although the preparation of the soap is the same all over the world, it is produced in varieties Different for different purposes using vegetable oils or animal fats. Soap is made from different oils and we will go over some of these oils

Shea Nut Oil:

Chemical analysis of shea butter extracted from nut samples from four African countries (Uganda, Nigeria, Burkina Faso, and Mali) was performed by Ben- Gurion University, Israel, as part of the ongoing EU- funded INCO project on shea butter [19].

Fatty acid analysis shows a high level of variability in Shea oils across Africa ,Table (1) .

Oil type	Lauric (12:0)	Myristic (14:0)	Palmitic (16:0)	Stearic (18:0)	Oleic (18:1)	Linoleic (18:2)	Linolenic (18:3)
Cocoa butter			25	35	30 - 40	2 - 4	
Olive			12	2	72	8	1
Palm oil (husk)	44	16	8	3	5	2	
Coconut							
Shea butter							
Literature	0 - 0.5	0 - 1.6	3 - 9	30 - 50	41 - 50	4 - 11	0 - 7.5
Uganda			6.5	26.4	59.3	6.2	0.2
Nigeria			3.2	38.9	47.5	6.5	0.2
Burkina Faso			12.1	42.5	39.3	4.5	0.2
Mali			19	31.1	42.6	5.7	0.2

Table (1):Fatty acid analysis shows a high level of variability in Shea oils across Africa.

The Ugandan sample had (59%) oleic acid content compared to (47%) for Nigeria and only (39%) for Burkina Faso,while Mali sample has content (42%), Solid, fatty shea butter, or stearin, is ideal for use in the manufacture of soaps and detergents Cosmetics [20].

Shea nut fat consists primarily of triglycerides (triglycerols) containing oleic acid at position 2 and saturated fatty acids, usually stearic or palmitic acids, in The first and third positions [21].

Katropha seed oil:

The fruits of the Katropha contain viscous oil that can be used in soap making [22], as it is rich in palmitic acid, with high levels of water resistance, and makes soft and durable soap even in the simplest manufacturing processes[23].

Castor seed oil:

This oil differs from all other commercial oils in that it is rich in ricinoleic acid, (~90%) compared to common vegetable oils. This oil also contains ricinoleic acids and its chemical formula is CHCHCHOHCHCH=CH(H)COOH. In addition to oleic acid, palmitic acid, and dihydroxystearic acid [24].

Castor oil is more viscous, less soluble in hexane, and more soluble in alcohol Ethanol, due to the presence of hydroxy acid. This hydroxy acid has many interesting properties during which it is converted into useful products [25].

Neem seed oil:

The oil extracted from its seeds consists mainly of triacylglycerin, oleic, stearic, linoleic and palmitic acids. Neem seeds produce about (40%) of the dark yellow oil, the well- known margosa oil [26].

In among all the other industrial uses in India, neem oil has been a major ingredient soap for at least (50) years [27].

Sesame seed oil:

The seed has been called the "queen of oil seeds" because of the high quantity and quality of the oil. Apart from [28] its uses in cosmetics and perfumes, it is also used in soap making, The hot extracted oil is mainly used in soap making [29] The table(2) shows some physical and chemical properties of the oil extracted from sesame oil Nigeria [30],

Where the white oil contains an oil percentage of (48), and its saponification value is (189), while the red oil contains an oil percentage of (50), and its saponification value is (191).

Table 2. Some physical and chemical characteristics of oils extracted from sesame seed grown in Jigawa State, Nigeria* (Mohammed and Hamza, 2008).

S/N	Analysis/physical and chemical characteristics	W	R
1	Colour	White	Red
2	Iodine value (gI_2/100 g)	103	116
3	Oil content (%)	48	50
4	Specific gravity (g/cm^3)	0.915	0.923
5	Acid value (mg KOH/g)	0.5	0.45
6	Peroxide value (Meq KOH/g)	8	7.45
7	Saponification value (mg KOH/g)	189	191
8	Cyanide test	Negative	Negative

*The values are mean of three replicates.

Virgin Coconut Oil:

Virgin coconut oil has a better saponification effect than coconut oil in general ,It contains a high percentage of lauric acid (46%). which is suitable for moisture skin, and it is good to use it as a basic ingredient for making natural liquid soap [31].

It is necessary to explore a blending technique to blend palm kernel and other seeds all of high saponification value,to produce good quality soap. Blending of palm kernel oil and rubber seed oil has not been reported for making soap [32]. The combination of ingredients for making soap can be seen from the literature [33].

Factors affecting the soap industry:

Based on the citation in Classic Belle, soaps made with a mixture of (NH_4OH) solution are more water soluble than soaps made with only (KOH) [31]. The soap industry has progressed greatly over the years with the production of high- quality soap. was evaluated by New raw materials and technology modification to accommodate these new materials. In the soap industry, the selection of raw materials depends on three important factors such as properties of oils or fats, availability of raw materials and cost competitiveness [34].

The soaping process:

The soaping process takes place by mixing vegetable and animal oils with an appropriate amount of alkaline substances And expose it to the appropriate temperature [35],

Since soaps are alkaline mineral salts of fatty acids and surfactants, they are used as cleaning agents as fatty acids [36]. While Ainley et al. suggested that the soap is a mixture of sodium salts of the following fatty acids: stearic, palmitic, myristic, lauric, and oleic acids[37].

Carl specified that a mixture of (80%) fatty acids from tallow and (20%) coconut fatty acids is used by most manufacturers. Explain that palm oil can be used As alternatives to lard and coconut oil, respectively [38].

On the other hand, in Egypt, toilet soap is made from a mixture of (85%) tallow or stearin palm kernels or a combination of them with (15%) palm kernel oil [39]. Tan et al., reported that carotenoids are responsible for the orange- red color of crude palm oil [40].

Mechanism of the saponification reaction:

Soaps are produced for various purposes ranging from washing, bathing, pharmaceuticals, etc.

The cleaning effect of soap is due to the negative ions on the hydrocarbon chain attached to the carboxylic group of fatty acids [34].

The soap- making process involves a saponification reaction, which is the hydrolysis between a stearic acid and an alkaline solution, resulting in the production of a long- chain hydrocarbon end and a carboxylic acid group that bonds to a metal, usually a sodium or

potassium ion [41].

As in the figure(1) that shows the saponification mechanism And how to prepare soap:

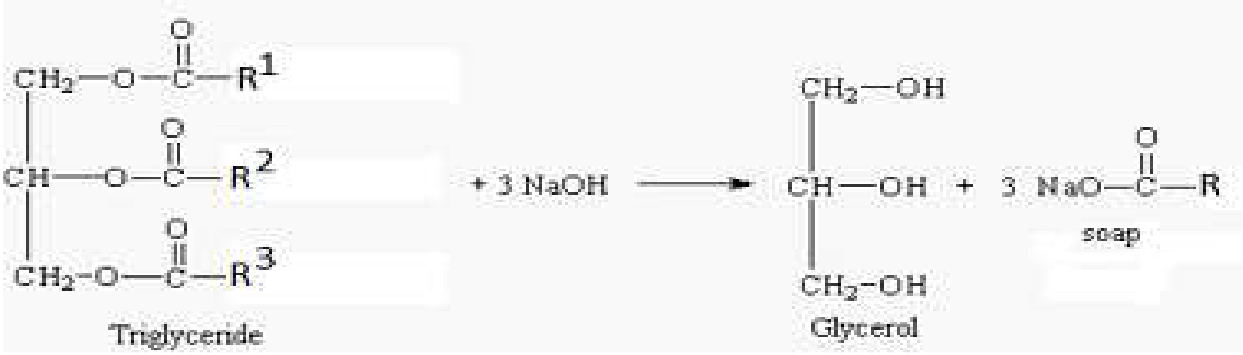

Figure (1) the saponification mechanism And how to prepare soap

This long- chain molecule is what is commonly called "soap" in most cases, The hydrocarbon end of the soap molecule (hydrophobic) is nonpolar and highly soluble in non- polar solvents such as grease grime, while the metal ionic (hydrophilic) end of the soap molecule is polar and soluble in polar solvents such as water.

Soap as a Detergent However:

Water cannot clean basic dirt because water is a polar solvent and grease is a non- polar materials And the similar dissolves the similar, when soap is used to clean grease or grime, the non- polar end of the soap molecules sticks to the dirt and forms a bilayer of micelles [42],

When water is added to the mixture, the polar tip of the soap molecules sticks to the polar end of the water, The soap acts as a bridge between the water and the dirt, and the resulting mixture is called an emulsion. The emulsion as a liquid liquid phase can now be washed off with water, thus cleaning grease from the surface [41].

Chemical properties of soap:

The chemical properties of soap depend on several factors: the strength and purity of the alkali, the type of oil, The user completes the saponification and the lifespan of the soap In addition to the physical and chemical properties measured moisture content, fatty acids Total (TFM), pH, free alkali, percentage of unsaponified materials, and stabilizer Foaming and specific gravity [43].

Research problem:

The problem of the current study is to identify and study the preparation of soap prepared from different oils, The French came up with a way to make soap from olive oil, and then this industry developed rapidly in England, where the chemist Karl and Shell accidentally discovered glycerin by adding olive oil and then adding lead oxide,

Chemistry scientists, After knowing the nature of the fats and oils used in the soap industry, chemists contributed to a significant improvement in the quality of soap in the fourteenth century AD.

research importance:

The importance of this study lies in the oils used in one of the important industries, which is the soap industry.

research aims:

1- Get acquainted with a brief history of the soap industry.

2- oils used in the preparation of soap.

search limits:

In this topic, we discuss animal and vegetable fatty oils, and these are the basic materials in the soap industry.

Define terms:

Vegetable oils and animal oils:

Both vegetable oils and animal fats consist of triglycerides, which are molecules of glycerol that are esterified to three carboxylic acids long- chain fatty acids).

When a triglyceride is combined with a water base such as sodium hydroxide or potassium hydroxide, hydrolysis of the esters of the fat occurs. It is the salts of fatty acids that give soap its distinctive properties.

Research methodology and procedure:

In this study, the hypothetical deductive method will be adopted, as a theoretical explanation of the variables will be presented The study, and based on previous studies, a set of hypotheses is built from previously existing theories and from Then test these hypotheses in order to come up with a set of results that can be generalized to the study population.

Theoretical framework and previous studies:

The soap industry is one of the most important industries that countries invest in to develop their economies, The industry depends mainly on the main materials used in it. Among these materials are oils and fats of all kinds, and in this chapter we will learn about some studies Previous in this field:

Midoligos acetate albatra (MPO) was obtained through the physical refining stage of an acyl raw lime, Medulligos acetate albatra contains a high percentage of free fatty acids (82.2%) and low amounts of neutral acids (11.9%), While the remaining content of unsaponifiable materials and impurities was (2.1%) in addition to (3.8%) water.

Results indicated that tallow oil, palm kernel oil, and color improved after bleaching. Eight soap samples (8-1) were prepared from bleached fatty mixtures of palm oil and tallow,and gum acetate in different proportions.

The results showed that the moisture content of the soap samples

No.(7, 2) and No. (8) was low compared to the control soap sample (1), and therefore the percentage of total fat was higher than that found in the control soap sample No (1), and the result was the use of palm oil gum in the production of soap toilet[44].

The production of liquid detergent group (Elaeis Guineesis) was examined using palm waste from local sources, and the optimum mixing ratio of rubber seed oil to palm kernel oil (20:80) as constituent elements used for soap production,

was obtained using a test Duncan is multi- range, The black pigmentation in the oil was removed by bleaching and compressed air was passed through it using activated carbon using the laboratory, The values of Soaping (130.5) and the local and laboratory KOH (126.3) respectively were obtained,

from the results of the expert tests. A high quality soap was produced using the local KOH compared to the KOH level in the laboratory [45].

A new, accurate and reliable method was described, which was applied to determine the quantitative and qualitative composition of free fatty acids in samples of laundry and toilet soap, and then evaluate the process of Aceylation as a derivation method for the analysis of free fatty acids in soap samples by mass spectrometry - gas chromatography,

using ammonium sulfate as a catalyst, and a detector. Low- cost acylation of hexamethyldisilazine (HMDS) and chloroform as a solvent. Gas chromatography- mass spectrometry analysis was performed using a capillary column (5- DB), The method was validated for linearity, accuracy, limits of detection, and quantification,

The validated method was found to have acceptable linearity with a coefficient of determination (>0.999), within the concentration range (2 - 0.005 mg/ ml),

The limits of detection and quantification were obtained from the regression analysis and were 2.5 and 8.pgm/ ML respectively, The validated method was applied to analyze four samples of different quality soaps, The specific amount of free fatty acids in soap ranged between (1.24 and 5.09%),This method can be applied to analyze the composition of free fatty acids in different soap samples [(46)].

Shea butter oil is obtained from the edible nut of the fruit of the Karite tree (Butyrospermum parkii) cultivated in the Savannah Grasslands in West Africa, Shea butter oil was extracted from the fruit by the cold process and used in the preparation of medical soap,

Chemical analysis showed that the obtained soap contained (76.0%, 9.0, 3.41min, 9.0, 0.00% 3.7% and 0.87), as total fat content, moisture, foam stability, pH, free caustic alkali, unsaponified weight and specific gravity, respectively,

Because of the botanical ingredients in shea butter oil and the chemical properties favorable to the soap, it can be used as a medicated toilet soap and as a cosmetic,This soap is used to relieve skin and scalp problems [(47)].

A preliminary study of the liquid soap production process within the local soap industry was conducted to collect the necessary information and to establish appropriate production procedures,

It was found that the viscosity and turbidity of the liquid soap produced using the developed machine is higher than the viscosity produced by hand[(48)].

Three different types of mineral oils were added, in the same amount (1%) as a ratio, to two different soap recipes of oils of animal origin and fatty acids derived from plants having the same foaming rate. and similar critical specification values. Tests of pH, conductivity, foaming performance, hardness and granules were applied to the obtained soap, and the results were analyzed by comparing the effects of different specifications of mineral oils, As a result of this study, the effect of adding mineral oils on soap samples was clarified and distinguished[(36)].

In another study, the processing and hardening processes of five types of soap produced from Nigerian local oils (palm oil, palm kernel oil, peanut oil, shea butter oil, and tallow oil) were compared,and the treatment process was studied by drying the soap samples under natural conditions and obtaining the daily lost moisture for a period of (21) days.

Hardness tests based on the Brinell hardness methodology were performed using a locally improvised hand inserter with a test load of (6.585 kgf) or (64.553 N),

Graphical plots of moisture loss against the one- day interval showed that all soaps showed similar behavior in the curing process [(41)],

The results showed that the hardness of the soap differed in this order: {tallow (HN 1.88) > HN 0.3, Shea butter > Palm oil (0.25 HN)> palm kernel 0.15 HN > peanut oil 0.13 HN}.

A research activity focuses on how to check soap products using the AOCS method, where the AOCS (American Petroleum Chemists Society), method is an applied method for measuring and analyzing levels in oil, So that it is known if these levels actually meet the criteria for processing into a high quality product, The quality of the final soap product can be determined and predicted by looking at the quality of the peroxide value, the iodide value, and the saponification value of the crude oil used in the soap product [49].

Virgin coconut oil has a better saponification effect than coconut oil in general, It has a high lauric acid content of (46%), it is good to use as a basic ingredient for making natural liquid soap, and hydrolysis is carried out on(Virgin Coconut Oil) (VCO) to obtain raw materials of free fatty acid ingredients for soap making,

In a study, a mixture of KOH and NH_4OH bases was used to produce more water- soluble soaps, This study aims to determine the quality of natural liquid soap from the saponification process between VCO hydrolysis and the base, and to determine the effect of the base concentration, mixing time and temperature on the quality of the produced soap,

The method in this study uses the response surface method. Where the resulting soap product is tested by physical and chemical tests. The critical value for liquid soap improvement is obtained at the basic ratio of KOH which is 8, the time is (140 min), the temperature is (92 °C), and the critical value of free fatty acid, is 0, The best soap results are sample 6, which corresponds to SNI 1996-4085-06 and SNI 721.0 3532-2016 [31].

The aim of this study was to select sheep fat from Tsetserleg total of - Arkhangai aimag as raw material and to produce liquid soap, The oil was extracted from raw materials such as sheep tail fat (TF), outer fat (OF), and inner fat (IF), which were elongated by chemical methods, and liquid soap was obtained by cold methods,

The most suitable oil for preparing liquid soap from the subjects was tail fat oil (TFO) and had the highest fatty acid content Unsaturated fats and crude oils were (41.23%), the highest content of saturated fatty acids was (22.3 1%), and the highest content of methyl stearate was (33.65%) by GC- MS analytical method[50].

The study aimed to describe the use of leftover frying oils, which originated mainly from households. in the production of homemade soap and emphasizing the advantages of biodegradation of soap compared to bioremediation of oils,

The physical and chemical analyzes of the soap were used to verify the differences between samples made from fresh and fried oils, A significant difference ($P < 0.05$) was obtained between the soaps Made with a pair of fresh olive oil and fried, Studies of the biodegradation process of soap reveal that soap is degraded four times faster than oils in waste treatment plants,

The results obtained, like the data from the literature, indicated that soaps produced from fried vegetable oils represented acceptable products from an economical and environmental point of view, Soap production can be considered as one possible way to reduce waste oils disposal [51].

Clay (kaolin) is used as an active ingredient in cosmetics due to its high level of absorption of substances such as oils, toxins, etc, This study aimed to investigate the effect of temperature reaction and addition of kaolin to the produced solid soap, Saponification reactions were performed for 10 minutes in a reaction flask at a temperature range of (50 °C to 80 °C),

The first stage was to heat the coconut oil to reaction temperature and then mix it with kaolin (10% 12.5 %, 15% 17.5 %, 20% wt), followed by the addition of (35%)NaOH. The reaction mixture was stirred at (250) rpm. The results of this study showed that all soap products comply with the Indonesian SNI standard[52].

In the present work (5) different types of oils are taken. They are mixed in different proportions, To prepare (14) different samples of soap. The different characteristics of these samples were analyzed for all samples,

The mixture of coconut oil and castor oil in the ratio of (3:1) was found to be the best with a ratio of (76.8) total fat mixed (TFM) and (89.46%) yield, It was found that the mixture has a SAP value of (230.4) and an iodine value of (40) which is higher than the individual values,

Thus, soap prepared using a mixture of these two oils has properties To find out which type of soap is the best. Better than soap prepared with single oils[53].

The study aimed to describe the possibility of exploiting waste frying oil through soap production. For the purposes of the experiment, palm oil was chosen as one of the most commonly used oils, Oil frying was performed in 5 different stages until the total polar substance (TPM) reached (6.5, 10, 15, 20 and 24%),

The oil samples acquired served as raw material for soap production, The following chemical parameters of the produced soap were tested: pH, moisture content, total alkali content, total fatty matter, and MDA (malondialdehyde), the differences between the types of soap obtained from fresh and fried palm oil were, Reasonable value for soap production[54].

The study aimed to analyze the possibility of exploiting waste frying oil in the production of homemade soap, Soap is made from unheated and fried rapeseed, sunflower and palm oils, with a total value of (24%), of the polar materials, Physical chemical and microbial analyzes were performed on the produced samples to verify their quality, The hardness increased with the degradation of rapeseed and palm oil levels, and inverse results were obtained for soap made from sunflower, The highest contents of malondialdehyde (MDA) were recorded for samples made from sunflower oil, with a maximum of (6.61 µg/ g), and the lowest for samples made from oil, with a maximum of (0.94 µg/ g), These findings highlight the potential for homemade soap production from this by- product[55].

This study analyzed the physical and chemical properties of five different types of soap produced from Five Nigerian oils processed locally, In the physical analysis, parameters such as weight loss were determined upon processing, moisture content, and Foamability of the soaps were determined. In the chemical analysis, factors were identified Such as the saponification value and the free fatty acid values of the soap. The analysis uses standard analysis methods Widely used, So it was concluded that the oils used in the production of samples Different soaps comply with the standard quality specifications recommended for bar soap production commercial[56].

The aim of this study is to determine the composition of Kananga soap using different types of oil and to characterize the quality of solid translucent soaps, Moisture content, free alkali content, pH hardness, foam stability and antibacterial activity were analyzed, The results showed that the soap made of VCO oil and (1.5%) Kananga oil had the best combination, of solid soap properties The transparent ones are water content (4.39 - 1.81%), free alkali content (0.630.96%) PH= 11.33-11.81, hardness (0.042-0.065mm/g/s), foam fastness (69.70 - 85.45%), However, more research is needed to reduce free alkali levels in soap and increase the concentration of cananga oil[57].

Three natural soaps have been maked using cold manufacturing to produce a base or control

bar (BB),and hibiscus rosehip bar (H), forest grove bar (FC), Principal component analyzes (PCA) showed that unsaponifiable fatty acids were Different in hibiscus tape compared to other tapes, These results indicate that fatty acids Soaps contribute significantly to quality, general sensory perception, and preference for non- herbal soaps Natural after cold saponification[58].

In the study, dissimilar oils of (5) types such as coconut oil, palm oil, castor oil, olive oil, and gee oil were used in order to prepare different soap bars,Then mix the oils in different proportions. In this study, the amount of volatile matter and moisture content were determined, Total fat content, alkali content and pH, The results obtained were compared with some types of commercially available soaps through the studies that were observed, and it was found that the soap made from olive oil has better properties, than other soaps containing good alkali, TFM value and other values. pH[59].

It was found that the oil of little use (domestic use) had little or no effect on the quality of the oil..except for its smell. This resulted in a bar of soap that had very similar properties to soap made from fresh oil, except that it was somewhat brittle, However, when the oil was used extensively, the properties of the oil changed dramatically. Including a deepening of color, an increase in the Free Fatty Acid (FFA) content to approximately 5,

and an acquired aroma. This resulted in a bar of soap that was darker in color, and had less lather than fresh oil soap By 14 on a scale (5), likely due to its higher essential fatty acid content. These results show that the use of light or heavy vegetable oil in the manufacture of soap results in High quality product at low cost[60].

Conclusions:

After reviewing the previous studies and through what was discussed in this issue, We conclude the following:

1- There are researches through which soap was prepared from different types of oils, whether its source was animal or vegetable [10.20].

2- The distribution of unsaturated and saturated fatty acids the hardness, aroma and cleansing of the soap and its foaming and moisturizing abilities [57].

3- Some research focused on the effect of oil on the properties of prepared soap, and some focused on taking advantage of many possible materials to prepare soap as a cleanser.

Recommendations:

1 - Study of animal oils used in the manufacture of soap.

2 - Study of vegetable oils used in the manufacture of soap.

3 Study the effect of oil type on the physical and chemical properties.

Propositions:

After reviewing recent research from previous years, he suggested the following:

1- Soap is prepared from food waste.

2- Studying the physical and chemical properties of soap prepared from food waste.

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