A COMPARATIVE ASSESSMENT OF THE PHYSICOCHEMICAL PROPERTIES AND FATTY ACID CONTENT OF *Jatropha curcas* L. SEED OIL AND SOME SELECTED SEED OILS

Supported by tetfund TERTIARY EDUCATION TRUST FUND

Yakubu Yahaya* and Abubakar Bello Zagga
Department of Pure and Applied Chemistry, Kebbi State University of Science and Technology, Aliero, Nigeria
*Corresponding author: yahayayakubu.yy@ksusta.edu.ng

Received: October 12, 2017 **Accepted:** April 16, 2018

Abstract: This study was undertaken to investigate the physicochemical properties and fatty acid composition of *Jatropha curcas L* seed oil and compared with those of selected seed oils used commercially in the production of soap and cosmetic. The seed samples were collected from a demonstration farm in Warra, Ngaski, Kebbi State. The oil was extracted using soxhlet extractor with n-hexane. The fatty acid composition was determined using GC-FID. The oil yield (47.24%) was adequate for commercial use. The acid value (5.24 mg/KOH/g) was higher than in the selected vegetable oils, but could be controlled through refining. The iodine value of 94.72 mg/g classified the oil into the nondrying type like sesame, jojoba, Adansonia Digitata, cotton and corn seed oils. The major fatty acids in the oil were linoliec acid (38.27%), oleic acid (35.60%), palmitic acid (10.72%), Stearic acid (6.92%), Palmitoleic acid (2.71%), Arachidic acid (1.49%), Linolenic acid (1.37%) and Myristic acid (0.26%). The percentage composition of the two most abundant unsaturated fatty acids (linoleic and oleic acids) compared well with those reported for sesame, cotton and corn seed oils. The two most abundant saturated fatty acids were palmitic and stearic acids. The value for palmitic acid compared well with those reported for sesame, almond and corn seed oils, while for stearic acid, it compared well with those reported for sesame, Adansonia Digitata and cotton seed oils. Refining of *J. curcas* seed oil could make it a good raw material for soap and cosmetic production.

Keywords: *Jatropha*, seed oil, physicochemical, fatty acids, soap, cosmetics

Introduction

The genus Jatropha belongs to the family Euphorbiaceae and contains about 170 known species of the plant. Like many other species of *Jatropha curcas L*. is a plant that grows well over a wide range of arid or semi-arid climatic conditions (Achana *et al*., 2011). *Jatropha curcas* L. is a vegetable that is native to Central and South America, but distributed to tropical and subtropical countries mainly Asia and Africa (Jumat and Waled, 2012). Although the plant is toxic, the seed is considered to be the most toxic part of the plant. Phorbol esters, trypsin inhibitors, phytates, saponins and lectins (curcin) are the toxic compounds in the seeds (Nabil and Yaseer, 2012). Varieties commonly found in Africa and Asia have seeds that are toxic, while non-toxic varieties of *Jatropha curcas* are reported in some part of the world including Mexico and Central America (Gubitz *et al.*, 1999). The toxicity of the seeds is often associated with the presence of phorbol esters. This is because the non-toxic Mexican varieties lack these compounds (Richard and NeBambi, 2010). Jatropha seed oil, like other vegetable oils contain mainly triacylglycerols, diacylglycerols, free fatty acids, phospholipids, glycolipids and small quantity of other substances. About 95% of most vegetable oils are made up of triacylglycerols and are of great economic importance (Youzbachi *et al*. 2015). The oil is reported to be rich in linoleic, oleic, palmitic, stearic and linolenic acids which are considered as the most important fatty acids in soap and cosmetic production (Oghome *et al.*, 2012). In many countries of Africa, *J. curcas* seed oil is used in soap production. The soap is said to be soft, good foaming and is effective to skin diseases (Pratt *et al.*, 2002; Messnmaker, 2008).

Soaps are water soluble sodium or potassium salts of fatty acids made by the process of saponification which occurs when fatty acids, lye (NaOH for bar soap and KOH for liquid soap) and water are mixed. Lye acts as the chemical emulsifier that bonds fatty acids with water molecules by generating heat (Oghome *et al*., 2012). Oils with more saturated fatty acids (with longer chains) contributes to hardness and/or lather in soaps, while oils with more unsaturated fatty acids contributes to conditioning but lather poorly. The more the presence of unsaturated fatty acids in an oil, the better the conditioning and the more easily it is absorbed by the skin, the softer the oil is in the soap but the more it is prone to oxidation (Oghome *et al.*, 2012; SBM, 2013). In soap making, the most common fatty acids are linoleic acid which provides conditioning and silky feeling. Apart from conditioning, oleic acid provides slippery feeling, stingy lather and is kind to the skin. Lauric acid provides hardness, excellent cleansing, lots of fluffy lather, but can be drying to skin. Myristic acid provides hardness, cleansing and fluffy lather. Palmitic acid provides hardness, cleansing and stable lather, while stearic acid provides hardness and stable lather (Nature's Garden, 2017). Due to the difference in the fatty acid composition in oils and fats and their resulting soap characteristics, the properties of a finished soap depends on the type of oil or fat used. Therefore, chosen recipe (combinations of specific oil mixed together) can result in combined fatty acids compositions tailored to make soaps with desired characteristics. However, other components in individual oils such as the non saponifiable matter that do not become soap may remain to affect the characteristics of soap produced. Most common vegetable oils used in industries for the production of soap include those from seeds of rosehip, jojoba, sesame, linseed, almond, avocado, borage, canalola, castor and hemp (Nature's Garden, 2017; Vermaak *et al.*, 2011; Antonio and Maria, 2000).

Cosmetics are usually mixtures of chemical substances (natural or synthetic) applied to human body for cleansing, beautifying, promoting attractiveness, or altering the appearance without affecting the body structure or functions (FDA, 2005). Vegetable oils used in cosmetic production provide oiling, softening, smoothing and protective properties to the skin. Oleic acid is reported to be an effective percutaneous absorption enhancer. Linoleic acid moisturizes the skin and aids in the healing process of dermatoses and sunburns. It is also used in the treatment of *Acne vulgaris* (Vermaak *et al.*, 2011; Aleksandra and Izabela, 2014). Skin permeation enhancing effects was also reported for palmitic acid, lauric acid and myristic acid (Vermaak *et al.*, 2011). This research work therefore aimed at comparing the

physicochemical properties and the fatty acid composition in *Jatropha curcas* L. seed oil with those of seed oils used in industries for soap and cosmetic production.

Materials and Methods

Sample collection and preparation

Sample seeds (20 kg) were obtained randomly from *J. curcas* L. plants in a test plot in Warra town, Ngaski Local Government area of Kebbi State, Nigeria. The seeds were further sun dried for a month (4 weeks) and damaged ones were discarded. The seeds de-hulled and air dried for a week. It was then ground into powder using laboratory pestle and Mortar prior to extraction of the oil.

Extraction of oil

The Jatropha seed oil was extracted using soxhlet apparatus by taking 500 g of the powered sample into a thimble with 250 cm^3 of n-hexane at 60ºC for about 8 h. The oil was recovered by evaporating off the solvent using rotary evaporator at 40ºC and oven dried at 75ºC for one hour. The oil was placed in a desiccator and allowed to cool before storing in a refrigerator at 5ºC until required for analyses (AOAC, 1998; Uzama *et al*., 2013).

Determination of physicochemical properties of J. curcas seed oil

The colour of the oil was determined according to AOAC (1998) using a Lovibond tintometer at 28ºC (Jumat and Waled, 2012; Bashar *et al*. 2013). The refractive index of the oil was determined using a refractometer, Abbe Refractometer (Nayak and Patel, 2010; Inekwe, *et al.,* 2012). The density of the oil was determined at 26ºC using density bottle (Inekwe *et al.,* 2012). The specific gravity of the oil was determined using specific gravity bottles at 25ºC with 100 cm^3 of water (Parthiban *et al.*, 2010). The viscosity of the oil was determined using Viscometer model (NDJ-8S) at 28ºC using 200 cm^3 of the oil at a speed 60 rpm (Inekwe *et al*., 2012; Mohammed-Dabo *et al*., 2012).

The iodine value was determined using 0.3 g of the oil in a 500 cm^3 flask, 15 cm^3 of carbon tetrachloride (CCl_4) and 25 cm^3 of wijs solution in a dark cupboard. This was followed with the addition of 20 cm^3 of KI solution (10% v/v) and 150 cm^3 of distilled water. The mixture was titrated against 0.1N solution of sodium thiosulphate until the yellow colour due to iodine almost disappeared. This was followed with the addition of 1% starch solution and the titration continued with shaking of mixture until the blue colour just disappeared after vigorous shaking. The blank titration was also conducted in the same way (Parthiban *et al*., 2010; Bashar *et al.,* 2013).

The saponification value of the oil was determined by taking 2 g of the oil into a 250 cm^3 flask containing 25 cm^3 of 0.5 M ethanolic potassium hydroxide solution with some boiling stones. The flask was connected to the condenser and the mixture was boiled gently for about 1 h. After cooling, 1 cm^3 of 1% v/v of phenolphthalein solution was added and titrated with 0.5 M hydrochloric acid until the pink colour of the indicator just disappeared. The blank titration was also conducted in the same way (Bashar *et al.* 2013). The Acid value was determined by taking 2 g of the oil into a 250 cm^3 flask. This was followed with the addition of 20 cm^3 of ethanol and heating the mixture on a steam bath for about 5 min. After cooling, it was titrated with 0.1N alcoholic potassium hydroxide using 1 cm^3 of 1% phenolphthalein solution as indicator. The blank titration was conducted in the same way (Arhcana *et al.*, 2011; Nayak and Patel, 2010).

The Free Fatty Acid was determined by taking 2.0 g of the oil and titrated with 0.14M solution of KOH using phenolphthalein as the indicator. During the titration process, the content was shaken until the end point was achieved (Zaharaddeen *et al.,* 2014). The Peroxide value was determined by using 1.0 g of the oil sample in a 250 cm^3 flask containing 1 g of powdered potassium iodide (KI). This was followed by the addition of the mixture of glacial acetic acid and trichloromethane (2:1). 20 cm^3 of 50% potassium iodide (KI) was added and titrated with 0.002N $Na_2S_2O_3$ in the presence of starch solution as the indicator. The same process was carried out for the blank (Zaharaddeen *et al.,* 2014). The fatty acid composition of the oil was determined using the method of AOAC (1998) by adding 1 cm^3 of n-hexane into 0.1 cm^3 of the oil followed by 1 cm^3 of 0.78 N sodium methoxide. The mixture was vortexed for about 10 sec and allowed to settle for 10 min. About 1µL of the top layer was injected into a Gas Chromatograph (model OP2010 PLUS SHIMAZU JAPAN) equipped with a Flame Ionization Detector and a polar capillary column BPX70 (30 m × 0.25 µm) to obtain individual peaks of the fatty acid methylesters. The column, detector (FID) and injector temperatures were set at 180 ºC, 280ºC, and 250ºC, respectively. The gas flow was at 1 mL/min and ran for 60 min. the peaks were identified by retention times by means of comparing with authentic standards (Emil *et al.,* 2009; Jumat and Waled, 2012).

Results and Discussion

Physicochemical properties of Jatropha curcas L. seed oil

Table 1 presents the physicochemical properties of the *Jatropha curcas* L. seed oil and selected seed oils of commercial value from literatures. The percentage oil yield of the *J. curcas* seeds was 47.24%. It compared well with 47.69 g/100g for *J. elbae* species, but higher than 39.77 g/100g for *J. andrieuxii* species and lower than 55.25 g/100g for *J. rzedowskii* species reported by Maricela *et al.* (2010). It compared well with 48.50 g/100g and 46.31 g/100g reported by Nzikou *et al.* (2009) and Nayak and Patel (2010) respectively. Similarly, the oil yield of *J. curcas* L seed was higher than the values reported for oils used for commercial production of soap and cosmetics in the table. Therefore, *J. curcas* seeds could be a good source of oil for industries. Like most seed oils, the colour of the extracted oil was golden yellow. The observed mean value (3.13%) for free fatty acid (FFA) compared well with 3.08% reported by Nzikou *et al.* (2009) but it was slightly higher than 2.43 and 2.23% reported by Parthiban *et al.* (2011) and Emil *et al.* (2009), respectively. When compared with values reported in the table for seed oils of commercially value, the Free Fatty Acids present in the *J. curcas* seed oil was lower than the 5.0% reported for Linseed oil, but higher than the values of 1, 2 and 1.7 – 2.8% reported for Cotton, Adansonia digitata and corn seed oils respectively. The acid value observed was higher than 0.3 mg KOH/g reported by Maricela *et al*. (2010) and slightly higher than 4.83 mg KOH/g reported by Parthiban *et al.* (2011) but comparable with 5.31 mg KOH/g reported by Singh and Saroj (2009).

On the other hand, the value was much lower than 36.46 mg KOH/g reported by Nayak and Patel (2010). Similarly, it was higher than the values reported for oils of commercial importance in the table. The acid value in this work was slightly high and could be as a result of the presence of free fatty acid. However, caustic refining of the acid will neutralize the free fatty acid and therefore lowers the acid value (Dan, 2005). The Iodine value of 94.72 g/100g observed in this work compared well with 93.0 g/100g reported by Kumar and Sharma (2008), but it was slightly higher than 92.56, 76.11 and 88. 55 reported in g/100g for three different Mexican Jatropha species by Maricela *et al.* (2010). It was slightly lower than 103.62 g/100g and 112.4 g/100g reported by Montes *et al.* (2011) and Emil *et al.* (2009), respectively. Also, the value was within the ranges of 65 – 95 and 90 -113 reported for linseed and cotton seed oils respectively. The higher is the iodine value, the more reactive, less stable, softer, and more susceptible to oxidation and rancidification is

the oil. Drying oils have iodine values between 150 and above; semi drying oils have values from 120 - 150 g/100g, while nondrying oils have values from 80 – 120 g/100g (Emil *et al.,* Montes *et al.,* 2011). The iodine value obtained in this work indicated that the Jatropha seed oil is a nondrying oil and therefore suitable for the production of cosmetics, a slightly soft soap, alkyl resins, shoe polish and varnishes. The 174 mg KOH/g observed as the saponification value was slightly higher than 166 mg KOH/g and 167 mg KOH/g reported by Nzikou *et al.* (2009), and compared well with 175.12 mg KOH/g reported by Archana *et al.* (2011). It was slightly lower than 180 mg KOH/g and 193.55 mg KOH/g reported by Montes *et al.* (2011) and Emil *et al.* (2009), respectively. It was also lower than 192.1 mg KOH/g, 193.6 mg KOH/g and 202.5 mg KOH/g reported by Maricela *et al.* (2010).

Similarly, the observed value was also lower than 189 – 200 mg KOH/g reported by Singh and Saroj (2009). The saponification value is high enough for the oil to be a normal triglyceride used in soap and cosmetic production. The peroxide value of 1.52 Meq/g observed in this research work was higher than 0.13 Meq/g and 0.21 Meq/g reported by Nzikou *et al.* (2009), but .compared well with 1.95 Meq/g and 1.93 Meq/g reported by Nabil *et al.* (2012) and Emil, *et al* (2009), respectively. Similarly, it compared well with 1.31 Meq/g and 1.34 Meq/g but lower than 2.34 Meq/g reported by Inekwe *et al.* (2012). Similarly, it was lower than the values reported for seed oils in the table. The low peroxide value indicated that the oil was stable as higher values indicate rancidity (Zaharaddeen *et al*., 2014).

Table 1 Physicochemical Jatropha seed oil and selected seed oils of commercial value from literatures

Seed Oil source	Colour	% Oil yield	Specific G (25ºC	Density (g/cm^3)	Ref Ind (28ºC)	FFA	AV (mg/KOH/g)	PV (meq/g)	Iodine V (mg/g)	Sap Value (mg/KOH/g)
Jatropha	Golden y	47.24	0.8527	0.9398	1.512	3.13	5.24	1.52	94.72	178.52
Rosehip	Light redish	-	0.900-0.950a (25ºC)		1.470-1.487a (25ºC)	-	<4a	<15a	165-190a	175-200a
Almond	Pale yellow	-	0.910-0.925a (20ºC)		-	-	0.2a	10a	-	-
Linseed	-	-	-	0.931a, 0.927-0.931b (20ºC)	1.480a, 1.4786-1.4815b, 1.463-1.499h	5b	1.5a	10a	160-200a, 170-204b	188-195a, 189-196b
Sesame	Pale yellow	40-60f	-	0.915-0.925a	1.473-1.475a	-	2a	10a	104-120h	188-198a, 186-195h
Jojoba	Golden yellow	-	0.855-0.875a (25ºC)		1.460-1.468a (25ºC)		-	<5a	80-90a	90-98a
Adansonia D	Pale yellow	26.47-32.02e	-		1.50b	2b	-	5-10b	65-95b, 87.9d	190-210b, 165-250d
Cotton	Pale yellow	-	-	0.922-0.928b, 0.981-0.926h (20ºC)	1.471	1b	-	10b	90-113b, 100-123h	180-198b, 189-198h
Corn germ	Golden yellow	<30g	0.920-0.928 (15.5ºC)b	0.912-0.926h	1.472-1.476 (20ºC)b	1.7-2.8c	0.2b	10b, 5.6-6.0c	103-128b, 102-110c	185-195b, 187-195h

a= Fontevita, 2017; b= Christina and Monice (2011), c= Dilsat *et al.* (2015); d= Vermaak *et al.* (2011); e= Wilson *et al*. (2015); f= Frank, Bailey; g=Robert Moreau, (Bailey); CODEX STAN 210 (2013)

Table 2: Fatty acid composition in percentage of *Jatropha curcas* seed oil and selected seed oils of commercial value from literatures

Source of Oil	Saturated Fatty Acids (SFA)					Polyunsaturated Fatty Acids (PUFA)				
	Palmitic	Arachidic	Myristic	Strearic	Oleic	Linoleic	Palmitoleic	Eicosanic	Euric	Linolenic
Jatrop seed	10.72	1.49	0.26	6.92	35.60	38.27	2.71	-	-	1.37
Rosehip seed	2.5-5.0a	-	-	1.0-3.0a	13-17a	42-49a	-	-	-	27-37a
Almond seed	0.8a 4-9b,c	0.2b	1b	3a, 2-3b, 2.5c	62-86a, 60-86b,c	20-30a,b 7-30c	0.2a 0.8b, 0.6c	0.3a,b	0.1a,b	0.4a, 0.4b, 0.1-1.0c
Linseed seed	5-7a, 5.5b, 5.3-8.0h	-	-	3-6a, 3.5b	15-35a, 19.1b	15-20a, 15.3b	0.5a, 0.2h	-	-	35-60a, 57b
Sesame seed	10-15a 7-12b,c	<1b	<0.5b, 0.2h	5-7a 3.5-6b, 1.9-2.9h	24-38a 35-60b, 35-50c	40-55a 35-50b,c, 67.8-83.2h	<0.5b	<0.5b	-	< 1b, 1c, 0.1h
Jojoba seed	<4a	-	-	-	5-25a	<5a	-	40-80a	10-25a	-
Adansonia D seed	18-30b,d	-	0.78d	2-8b, 2-9d	30-40b, 30-42d	24-34b, 20-35d	1b	-	-	1-3b
Argan seed	14e	-	1e		46e	34e	-	-	-	1e
Cotton seed	21b, 17-29c, 21.4-26.4h	-	2b, 0.6-1.0h	13b, 1-3c, 2.1-3.3h	30b, 16-44c, 14.7-21.7h	45b, 33-58c, 46.7-58.2h	<2c, 1.2h	-	-	1b,d, 0.4h
Corn seed	8-16.5b, 11-13c, 8.6-16.5h	-	0.1-1.7b, 0.3h	0-4.5b, 2-3c, 3.3h	19-49b, 25-31c, 20-42.2h	34-66b, 54-60c, 34-65.2h	0.2-1b 6b 0.5h	1b	-	0-2b, 1c, 2h
Hemp seed	6e	-	-	2e	12e	57e	-	-	-	21e

a= Fontevita, 2017; b= Christina and Monice (2011), c = obtained from Antonio and Maria (2000), d – Vermaak *et al.* (2011), e= Nature's Garden 2017; h= CODEX, 2013

Fatty acid composition

Table 3 presents the fatty acid composition of *Jatropha curcas* L. seed oil analysed by GC-MS and for selected seed oils of commercial value from literatures. The major fatty acids in the oil were linoliec acid (38.27%), oleic acid (35.60%), palmitic acid (10.72%), Stearic acid (6.92%), Palmitoleic acid (2.71%), Arachidic acid (1.49%), Linolenic acid (1.37%) and Myristic acid (0.26%). The linoleic acid composition in the jatropha seed oil was within the range of 34.6 – 44.4% reported by Martinez-Herrera *et al.* (2006) and could be compared with 33.42% reported by Archana *et al.* (2011) and 33.3, 33.1 and 34.7% reported by Jumat and Waled (2012). On the other hand, it was lower than 47.3% reported by Adebowale and Adedire (2006). The composition of linoleic acid in the jatropha seed oil was observed to be within the ranges of 35 -50%, 33 – 58% and 19 – 49% reported in the table for sesame, cotton and corn seed oils respectively used commercially in soap and cosmetic production. The percentage composition of oleic acid in the oil was higher than 12.8, 23.4 and 30.2% reported by Adebowale and Adedire (2006), Nabil and Yasser (2012) and Montes *et al.* (2011), respectively. It was lower than 44.93, 40.39 and 44.7% reported by Arhcana *et al.* (2011), Nayak and Patel (2010) and Emil *et al.* (2009), respectively.

Similarly, the value was lower than the range of 41.5 – 48.8% reported by Martinez-Herrera *et al.* (2006). The obtained percentage composition of oleic acid in the *J. curcas* seed oil was within the ranges of 15 -35%, 24 – 38%, 30 – 40, 16 - 44% and 19 – 49% reported in the table for Linseed, Sesame, Adansonia Digitata, Cotton and Corn seed oils, respectively used commercially for the production of soap and cosmetics. The percentage composition of palmitic acid compared well with 11.3% reported by Adebowale and Adedire (2006) and was within the range of 10.5 – 13.0% reported by Martinez-Herrera *et al* (2006) and 10 -13.2% reported by Montes *et al* (2011). The value was slightly lower than 14.2% reported by and Emil *et al.* (2009) and 15.40% reported by Archna *et al.* (2011). The obtained percentage composition of palmitic acid in the *J. curcas* seed oil was comparable with the maximum values of 9 and 8% reported in the table for Almond and linseed seed oils, respectively. It was within the ranges of 7 – 15% and 8 – 16.5% reported for Sesame and Corn seed oils, respectively. The percentage composition of stearic acid compared well with 6.26%, 7.0% and 7.67% reported by Arhcana *et al*, (2011), Emil, *et al.* (2009) and Nayak and Patel (2010), respectively; but it was lower than 17% reported by Adebowale and Adedire (2006).

On the other hand, it was higher than the range of 2.45 – 2.80% reported by Martinez-Herrera *et al.* (2006) and 5.40% reported by Montes *et al* (2011). The obtained percentage composition of stearic acid in the *J. curcas* seed oil compared well with the maximum of 6% reported in the table for linseed oil and it was within the ranges of 1.9 – 7%, 2 – 9% and 1 – 13% reported in the table for Sesame, Adansonia Digitata and Cotton seed oils respectively. The percentage composition of arachidic acid in the *J. curcas* seed oil compared well with 2% reported by Emil *et al.* (2009) but lower than 4.7% reported by Nabil and Yasser (2012). The percentage composition of arachidic acid obtained in *J. curcas* seed oil was slightly higher than 0.2 for Almond seed oil and it was higher than 1% for Sesame seed oil reported in the table. The percentage composition of linolenic acid in the *J. curcas* seed oil was slightly higher than 0.2% reported by Emil *et al* (2009) and Nabil and Yasser (2012) as well as the range 0.11 – 0.21% reported by Martinez-Herrera, *et al.*, (2006). However, the observed percentage composition of linolenic acid in the *J. curcas* seed oil was within the range of 1 – 3% and 0 -2% reported in the table for seed oil of Adansonia Digitata and Corn seed oils respectively. The percentage composition of palmitoleic acid was higher than 0.7 reported by Emil *et al* (2009) and the range of 0.32 – 0.55% reported by Martinez-Herrera *et al.* (2006). Similarly, it was higher than most of the values provided in the table for seed oils used commercially for the production of soap and cosmetics. The percentage composition of myristic acid compared w ell with 0.1% reported by Emil *et al.* (2009) and was within the range of 0.15 – 1.18% reported by Martinez-Herrera *et al.* (2006). The percentage composition of myristic acid was generally low and compared well with the values reported in the table for other seed oils.

The composition of oleic and linoleic acids in the *J. curcas* seed oil observed in this work are adequate to provide the conditioning property that may be required in a soap recipe. It likely to produce a bar soap that is low in terms of hardness because of the low composition of palmitic acid, stearic acid, myristic and arachidic acid which provide hardness. The composition of linoleic acid in *J. curcas* seed oil was adequate to provide in cosmetics the ability to moisturize the skin and to aid in its healing process. Similarly, the composition of oleic acid in the seed oil was adequate to provide the permeation enhancing effect on the skin.

Conclusion

The results obtained in the analysis and after comparing with those Sesame, Adansonia Digitata and corn seed oils, indicated that *J. Curcas* L. seeds contained appreciable quantity of oil that can be used commercially. The acid and free fatty acid values are likely to affect the quality of the oil, but it can be handled through refining and making the correct recipe. The values for saponification, peroxide and iodine indicated that the oil is nondrying and could be used as substitute for cotton and Adansonia Digitata seed oils in soap and cosmetic production. Similarly, the compositions of linoleic acid and oleic acid which are the major unsaturated fatty acids that have several beneficial properties in soap and cosmetics were adequate and compared well with those reported for sesame, corn and cotton seed oils. Therefore, *J. curcas* seed oil is a good industrial raw material for the soap and cosmetic products.

Acknowledgement

The Authors wish to thank the Management of Kebbi State University of Science and Technology, Aliero and TETFund for making available the grant utilized in this research. Similarly, the Authors wish to express their appreciation to the Staff of the Laboratory of the Department of Pure and Applied Chemistry of the Institution and the entire staff of NARICT Zaria, Nigeria.

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