

OIL OF THE SEEDS OF LUFFA CYLINDRICA

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Khimiya Prirodnkh Soedinenii, Vol. 4, No. 3, p. 187, 1968

Luffa cylindrica (suakwa vegetablesponge), family Cucurbitaceae is cultivated in the hot zones of the globe and, in the USSR, in the Caucasus, in the Crimea, and in the Central Asian republics.

The dimensions of the seeds are: length 12–14 mm, breadth 6–7 mm, thickness about 3 mm; weight of 1000 seeds 110 g. Ratio of the weight of the kernel to the weight of the husk 52:48. Oil content of the seeds (absolutely dry matter) 23.5%, kernel 43.1%. The seeds are rather bitter and on internal consumption act as a laxative.

The oil isolated from them is red with a greenish tinge. Specific gravity d_4^{20} 0.9204; n_D^{20} 1.4785; viscosity 10.25° E. Saponification no. 187.4 mg/g; iodine no. 108.5; thiocyanogen number 66.85%. Neutralization number of the fatty acids isolated from the oil 202.5; mean molecular weight 277. The mixtures of fatty acids have the following composition: palmitic 8.95%, stearic 18.23%, oleic 29.98%, linoleic 47.10%, dienolic C_{18} with conjugated double bonds 3.74%.

Pigments present in the oil are γ -carotene and chlorophyll-b, and it contains 0.47% of phosphatides. The unsaponifiable fraction contains a crystalline substance with mp 142° C giving positive Sal'kovskii, Liebermann-Burchard, and Chugaev reactions for sterols [1].

REFERENCE

1. K. Bauer, Organic Analysis [Russian translation], Moscow, p. 432, 1953.

16 January 1968

Institute of the Chemistry of Plant Substances AS UzSSR

THE OIL OF FRAXINUS SEEDS

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Khimiya Prirodnkh Soedinenii, Vol. 4, No. 3, pp. 187–188, 1968

We have studied the oil of two species of ash growing in the Central Asian republics: Fraxinus pensylvanica (red ash) and F. lanceolata (green ash), family Oleaceae. There is information in the literature only on the oils of F. speciosa [1] and F. excelsior (European ash) [2].

Index	Red ash		Green ash	
	oil	fatty acids	oil	fatty acids
Specific gravity, d_4^{20}	0.9247	—	0.9267	—
Refractive index, n_D^{20}	1.4820	—	1.4822	—
Viscosity, poise	0.5064	—	0.6080	—
Saponification no., mg/g	194.20	—	186.71	—
Iodine no., %	148.84	134.78	148.36	133.93
Thiocyanate no., %	93.07	84.99	92.94	84.78
Neutralization no., mg/g	—	198.01	—	204.45
Mean mol. wt.	—	283.30	—	274.44
Acetyl no., mg/g	11.80	—	12.14	—
Content of				
Phosphatides	Traces	—	Traces	—
Unsaponifiables, %	19.87	—	12.14	—

The seeds of the red ash contain 58.5% of kernel and the weight of 1000 seeds is 36.5 g, the oil content of the kernel being 24%; the seeds of the green ash have 48.5% of kernel, the weight of 1000 seeds is 82-85 g, and the oil content of the kernel is 25.8%.

The physical and chemical properties of the oils of these species of ash are given in the table.

The following results show the fatty acid composition of the oils:

<u>Fatty acids</u>	<u>Red ash</u>	<u>Green ash</u>
Saturated	5.68	5.53
Oleic	47.22	42.75
Linoleic	47.10	50.22
Dienic acids with conjugated double bonds	-	1.50

Among the saturated fatty acids of the oil of the ash seeds have been found palmitic and stearic, and in small amounts, arachidic, behenic, lignoceric, and cerotic acids.

The oil is characterized by a high content of unsaponifiable substances. From the mixture of the latter was isolated 2.5-3% of white crystals with mp 68-69° C which, on the basis of elementary analysis and IR spectra, are heneicosyl alcohol, $\text{CH}_3(\text{CH}_2)_{19}\text{CH}_2\text{OH}$. In addition, we have obtained 5.7% of a substance with mp 135-136° C which in admixture with β -sitosterol gave no depression of the melting point. The unsaponifiable matter also contains aldehydes the nature of which has not been established.

REFERENCES

1. L. Ubbelohde, Handbuch der Chemie und Technologie der Ole und Fette, Leipzig, vol. 2, 343, 1920.
2. A. Grün, Analyse der Fette und Wachse, Berlin, vol. 2, 142, 1929; N. I. Sharapov, Oil-Bearing Plants and the Oil-forming Process [in Russian], Moscow-Leningrad, p. 343, 1953.

16 January 1968

Institute of the Chemistry of Plant Substances AS UzSSR

UDC 547.633

ANTHRAQUINONE PIGMENTS OF RUMEX RECHINGERIANUS

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Khimiya Prirodnikh Soedinenii, Vol. 4, No. 3, pp. 188-189, 1968

We have studied the roots and seeds of Rumex rechingerianus collected in September 1966 in the foothills of the Trans-Ili Ala-Tau.

Substance from the roots and seeds	Mp, °C	Content, % by weight of absolutely dry material	
		in the roots	in the seeds
Chrysophanol (I)	196	0.57	0.29
Frangula-emodin (II)	256	0.11	0.03
Chrysophanein (III)	245	0.45	0.08
Glucofrangulin (IV)	190	0.07	0.02

The anthraquinone pigments were extracted by treatment of the air-dry raw material with a mixture of benzene and ethanol (20:1) and with methanol. The benzene-ethanol extract was separated by chromatography on a mixture of magnesium carbonate and silica gel [1]; substances I and II were isolated. The methanolic extract, by chromatography on finely disperse Kapron [~Nylon] powder and elution with dilute methanol, gave substances (III) and (IV); the same substances were obtained from the roots and from the seeds (see table).

These substances were identified with known samples [1, 2]. The properties of chrysophanein and glucofrangulin were also confirmed by the products of acid hydrolysis.