OIL OF THE SEEDS OF Dictamus angustifolius

A. U. Umarov

UDC 547.915+665.34

Dictamnus angustifolius is a perennial herbaceous plant of the family Rutaceae that grows in the central belt of the mountains of the Tashkent and Fergana oblasts [1]; it flowers in May-June and fruits in June-July.

The seeds, which were collected in the Tashkent oblast (Angren region, Lashkereksai) are black, lustrous, glabrous, and round with a diameter of 4-5 mm. The weight of 1000 seeds was 23.31 g, the bulk density 576 g, and the oil content (on the absolutely dry matter) 43.80%.

The oil obtained by cold extraction with petroleum ether is yellow and odorless. The physical and chemical properties of the oil and of the mixture of fatty acids isolated from it are given in Table 1.

We isolated the mixture of fatty acids by alkaline hydrolysis at room temperature with the previous separation of the unsaponifiables [2]. The methyl esters were obtained by esterification with diazomethane. The fatty-acid composition of the oils was determined by gas–liquid chromatography:

Acid	Amount, %	Acid	Amount, %
Pelargonic	0.55	Stearic	2.50
Capric	1.70	Palmitoleic	0.32
Undecylic	1.95	Oleic	23.77
Tridecylic	0.17	Linoleic	41.07
Myristic	0.33	Linolenic	21.90
Palmitic	5.74		

The oil studied belongs to the semidrying class. The seed oil of the Central Asian plant Halophyllum perforatum of the same family [3], which has been studied previously, is also rich in di- and triunsaturated acids and belongs to the semidrying class.

The triglyceride composition of the oil was determined by enzymatic hydrolysis [4].

Triglycerides	Amounts, %	Triglycerides	Amount, %
GlSSS	0.10	GlUSU	2.57
GlSUU	27.07	GlSUS	2.77
GlSSU	1.07	GlUUU	66.42

At the same time it was established that 96.25% of the β-positions of the triglycerides were occupied by unsaturated acids.

TABLE 1

Index	Oil	Index	Oil	Mixture of fatty acids
Density, d_4^{20}	0,9217	Iodine No., % I_2	158,94	161,92
Relative viscosity, °E	7,2800	Thiocyanogen No., % I_2	90,39	91,95
Refractive index, n_D^{20}	1,4780	Neutralization No., mg of KOH/g	—	204,56
Acid No., mg of KOH/g	2,78	Mean molecular weight	—	274,30
Saponification No., mg of KOH/g	193,24	Content of unsaponifiables, %	—	1,09
Hehner No., %	94,65	Content of phosphatides, %	—	0,13

Order of the Red Banner of Labor Institute of the Chemistry of Plant Substances, Academy of Sciences of the Uzbek SSR. Translated from Khimiya Prirodnykh Soedinenii, No. 2, p. 244, March-April, 1974. Original article submitted September 14, 1973.

LITERATURE CITED

1. The Flora of Uzbekistan [in Russian], Vol. IV, Tashkent (1959), p. 75.
2. Handbook on Methods of Investigation, Technical Control, and the Accounting of Production in the Oils and Fats Industry [in Russian], Leningrad, Books 1 and 2 (1967).
3. A. L. Markman and M. A. Avazova, Maslob.-zhir. Prom. No. 2, 10 (1964).
4. T. V. Chernenko, A. L. Markman, and A. U. Umarov, Prikl. Biokhim. i Mikrobiol., 5, No. 5, 616 (1969).