THE OIL OF THE SEEDS OF Inula grandis

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Inula grandis Schrenk, family Compositae, grows widely in Central Asia and bears fruit in August [1]. The seeds that were studied were collected in the spurs of the Pskemskii range in July (two weeks after the end of flowering) and in September (in the period of full ripeness).

Sesquiterpene lactones [2-4], diols [5], and organic acids [6] have been obtained from this plant previously. The present communication gives the results of a study of the fatty oil of the ripe and not completely ripe seeds of Inula grandis.

The oil content of the ripe seeds was 11.6%, and of the incompletely ripe seeds 9.2%. The physicochemical indices of the oil of the ripe seeds were: light yellow color, d^{20} 0.9280, n_D^{20} 1.4807, saponification number 194.49, acid number 15.49, unsaponifiables content 4.76%.

The fatty acids isolated from the oil had a neutralization number of 201.50, a mean molecular weight of 278.4, and an unsaturation index [7] of 48.5.

The fatty-acid compositions of the oils of the ripe and not completely ripe seeds (determined by gas-liquid chromatography) are given below:

Fatty acids	Ripe seeds, %	Incompletely ripe seeds, %
Caprylic	—	0.874
Pelargonic	—	0.43
Lauric	0.27	0.48
Tridecylic	—	0.69
Myristic	1.03	1.26
Palmitic	12.01	17.34
Palmitoleic	0.72	1.22
Stearic	3.80	0.37
Oleic	14.04	20.92
Linoleic	68.13	47.37

The oil of the unripe seeds differed considerably in fatty-acid composition from the oil of the ripe seeds. The former contained caprylic, pelargonic, and tridecylic acids. As the seeds ripened, these acids disappeared from the oil, and the amounts of lauric, palmitic, stearic, and oleic acids fell sharply while the amount of linoleic rose considerably (to 68%).

The triglyceride composition of the oil of the ripe seeds was determined by enzymatic hydrolysis [8]. Found: GlSSS 0.40; GlSSU 2.96, GlUSU 5.49, GlSUS 4.11, GlUUU 56.54, GlSUU 30.50.

As can be seen from the figures given, the fatty oil of I. grandis is characterized by a high content of unsaturated fatty acids, which is a specific feature of representatives of the family Compositae. The oil has a large amount (92%) of tri- and diunsaturated glycerides.

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