SEED OILS OF Malcolmia turkestanica AND Euclidium syriacum

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The plants mentioned in the title are representatives of the perennial family Cruciferae, the seed oils of which contain considerable amounts of acids with 20 and more carbon atoms in the majority of cases. Among them, erucic acid perdominates quantitatively [1, 2]. However, the seed oils of the plants that we have investigated, which grow in Uzbekistan and Tadzhikistan (oil contents 32.27% and 8.43%, respectively) do not contain erucic acid. By paper chromatography [3] we found in both oils only traces of arachidic and behenic acids. The physicochemical indices of the oils studied and of the mixtures of fatty acids obtained from them are given in Table 1.

The fatty-acid compositions of both oils, determined by the GLC of the corresponding methyl esters in a column containing poly(ethylene succinate) were as follows: capric 0.62 and 0.73%, undecylic 0.69 and 0.79%, lauric 0.51 and 0.68%, tridecylic 0.50 and 0.49%, myristic 0.00 and 0.59%, palmitic 12.63 and 13.83%, stearic traces and 3.52%, palmitoleic 3.11 and 6.33%, oleic 22.81 and 22.14%, linoleic 13.86 and 11.53%, linolenic 45.27 and 39.37%. As can be seen, in these oils acids of the C_{18} series prodominate with a high content of the total unsaturated acids (85.05 and 79.37%).

The triglyceride compositions, determined from the results of enzymatic hydrolysis with pancreatic lipase [4] were: GlSSS 0.15 and 0.15%, GlSSU 1.18 and 0.72%, GlUSU 2.27 and 0.82%, GlSUS 4.10 and 8.91%, GlSUU 60.74 and 41.36%, GlUUU 31.56 and 48.04%. At the same time, it was found that 96.40 and 98.31%, respectively, of positions 2 in the triglycerides were occupied by unsaturated acids.

The results of UV and IR spectroscropy and of PC and TLC showed that the oil isolated from Malcolmia turkestanica is resistant to oxidation.

TABLE 1

Index	Units of measurement	Malcolmia turkestanica		Euclidium syriacum	
		oil	mixture of fatty acids	oil	mixture of fatty acids
Density, d_4^{20}	g/cm³	0,9255	—	—	—
Refractive index, n_D^{20}	—	1,4835	—	1,4819	—
Viscosity	°E	7,532	—	—	—
Acid No.	mg KOH/g	1,51	—	1,06	—
Saponification No.	mg KOH/g	175,21	—	163,61	—
Hehner No.	%	86,89	—	86,54	—
Content of unsaponifiables	%	1,12	—	3,42	—
Iodine No.	% I_2	165,55	171,81	149,21	153,01
Neutralization No.	mg KOH/g	—	206,06	—	197,01
Mean molecular weight of the fatty acids	—	—	272,25	—	261,92

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