

THE SEED OILS OF *Erysimum silvestris*
AND *Crambe amabilis*

A. U. Umarov and N. T. Kisapova

By standard methods [1], we have investigated the seed oils of two species of the family Cruciferae: *Erysimum silvestris* (Tashkent Botanical Garden) and *Crambe amabilis* Butk. et Majlun (collected in the Tashkent oblast in the upper reaches of the R. Keles) [2].

The seeds of the two plants were comminuted and extracted with petroleum ether by steeping. Both oils are light yellow in color and odorless. Some physical and chemical indices of the oils are given in Table 1.

To determine their glyceride compositions, the oils were hydrolyzed [3] with the enzyme of the pancreatic gland. The compositions of the initial triglycerides (TG) and of the monoglycerides (MG) obtained were determined by thin-layer and gas-liquid chromatography (Table 2).

TABLE 1

Index	<i>Erysimum silvestris</i>		<i>Crambe amabilis</i>	
	oil	fatty acids	oil	fatty acids
Density: d_{40}^{20}	0,9193	—	0,9089	—
Refractive index, n_D^{20}	1,4781	—	1,4719	—
Viscosity, cP	72,58	—	73,32	—
Acid No., mg KOH	2,27	—	4,36	—
Saponification No., mg KOH	186,27	—	180,43	—
Hehner No., %	86,87	—	87,32	—
Content of unsaponifiables, %	1,56	—	1,55	—
Iodine No., % I ₂	135,32	137,75	136,05	137,23
Neutralization No., mg KOH/g	—	193,98	—	187,38
Mean mol. wt. of the fatty acids	—	289,25	—	299,44
Oil content, %	30,04	—	18,41	—

TABLE 2

Acid	<i>Erysimum silvestris</i> , %		<i>Crambe amabilis</i> , %	
	MG	TG	MG	TG
Myristic	0,37	0,14	0,94	0,37
Palmitic	0,95	4,50	2,40	3,47
Stearic	—	1,59	—	1,46
Arachidic	—	2,44	—	2,07
Total saturated acids	1,32	8,67	3,34	7,37
Palmitoleic	0,94	0,96	1,33	1,06
Oleic	19,06	12,17	50,81	22,83
Linoleic	45,58	25,02	29,25	12,97
Linolenic	33,0	30,70	15,27	24,99
Erucic	—	22,48	—	30,78
Total unsaturated acids	98,68	91,33	96,66	92,63

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On the basis of the figures given in Table 2 we calculated the triglyceride composition of the oils.

For the oil of Erysimum silvestris: GISSS - 0.02%; GISUU - 13.20%; GIUSU - 2.87%; GISSU - 0.45%; GISUS - 0.52%; GIUUU - 82.94%. For the oil of Crambe amabilis: GISSS - 0.01%; GISUU - 15.64%; GIUSU - 1.11%; GISSU - 0.20%; GISUS - 0.74%; GIUUU - 82.30%.

In the triglyceride molecules, the β position is occupied mainly by unsaturated acids (91.33%, 92.63%). The erucic acid is found exclusively in the α, α' positions. This has been established in the investigation of the seed oils of other species of the family Cruciferae [4, 5]. The presence of erucic acid in the fatty oils is characteristic for the majority of representatives of the family Cruciferae. V. S. Dolya et al. [6] found erucic acid in two oils but did not find this acid in the oil of Grecian stock [Matthiola bicornis].

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