



REFERENCES

1. Z. F. Ismailov, S. Kh. Maekh, and S. Yu. Yunusov, DAN UzSSR, no. 12, 22, 1960.
2. S. Kh. Maekh and S. Yu. Yunusov, DAN UzSSR, no. 9, 27, 1964.
3. S. Yu. Yunusov and M. V. Telezhenetskaya, DAN UzSSR, no. 5, 22, 1963.
4. J. Padilla and J. Herran, Tetrahedron, 18, 427, 1962.
5. S. Kh. Maekh and S. Yu. Yunusov, KhPS [Chemistry of Natural Compounds], no. 3, 188, 1965.
6. R. R. Arndt, J. Chem. Soc., 4, 2547, 1963.
7. M. Tomito and I. Takano, RZhKhim., 15, Zh, 375, 1961.

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Institute of the Chemistry of Plant Substances
AS Uzbek SSR

THE OILS OF SOME SPECIES OF CRUCIFERAE

A. L. Markman, A. U. Umarov, B. M. Baram, and K. K. Domanskaya

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The present communication gives the results of an investigation of the oils of the seeds of Brassica elongata, Erysimum gypsaceum and Diptychocarpus strictus. There is no information in the literature on the oils mentioned; the technical characteristics of the seeds are given in Table 1, I.

The oils obtained from the seeds are golden yellow and mobile (Table 1, II).

The fatty acids were isolated from the oils, and the fatty acids of the total mixture from each oil were separated into saturated fractions (by Bertram's method) and solid acids (by Twitchell's method) (Table 1, III).

The qualitative composition of the fatty acids (the complete mixtures, individual fractions, and the products of their hydrogenation) was determined by paper chromatography, and the quantitative composition by the spectrophotometry of a mixture of the acids after isomerization by heating in alkaline glycerol solution (Table 2).

Steroids were found in the unsaponifiable fractions of all the oils which we isolated; β -sitosterol was isolated from the oil of D. strictus and identified.

Of the pigments, all oils were found to contain α -carotene; in addition, the oil of D. strictus contained chlorophyll-b and the oils of E. gypsaceum chlorophyll-a and chlorophyll-b.

The oil of D. strictus, which contained more than 70% of highly unsaturated acids, has been investigated with respect to its technical properties. The lacquer and enamel prepared from its penta-phthalic resin by the prescriptions of PFL-3 completely satisfied the requirements of TU [technical standard] 104-47 of Glavlakokraski and GOST [State standard] 6465-63.

Table 1

Characteristic	<i>D. strictus</i>	<i>B. elongata</i>	<i>E. gypsaceum</i>
I. Technical characteristics of the seeds			
Bulk density, g/l	402.7	634.0	564.3
Weight of 1000 seeds, g	1.60	23.90	0.21
Oil content on an absolute dry matter basis, %	18.76	32.12	34.41
II. Physical and chemical properties of the seeds			
Specific gravity, d_4^{20}	0.9223	0.9155	0.9178
Relative viscosity, η_E	7.94	11.37	8.20
Refractive index, n_D^{20}	1.4839	1.4742	1.4764
Saponification number mg KOH/g	189.93	172.9	175.7
Iodine number, %	199.39	113.23	139.47
Thiocyanogen number, %	115.23	83.22	89.43
Content of			
Phosphatides, %	—	0.107	0.293
Unsaponifiables, %	1.71	0.91	1.25
Tocopherols, mg-%	21.0	—	—
III. Characteristics of the fatty acids and their fractions			
Iodine number, %	210.29	120.35	145.44
Thiocyanogen number, %	124.84	92.81	92.68
Hexabromide number, %	58.78	4.66	18.04
Mean mol. wt.	277.53	302.10	298.17
Yield of saturated acids, %	9.65	4.9	7.21
Mean mol. wt. of the saturated acids	272.29	328.3	326.55
Yield of solid acids, %	6.14	15.25	16.84
Iodine number of the solid acids, %	0.34	62.30	47.92

Table 2

Acids	<i>D. strictus</i>	<i>B. elongata</i>	<i>E. gypsaceum</i>
Linolenic	63.74	6.60	19.65
Trienic with conjugated double bonds	0.03	0.07	0.03
Linoleic	11.41	16.09	13.57
Dienic with conjugated double bonds	1.16	4.81	2.42
Oleic	14.01	57.18	47.49
Erucic	—	10.35	9.63
Saturated	9.65	4.90	7.21

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