

BRIEF COMMUNICATIONS

FATTY ACID COMPOSITION OF THE NEUTRAL LIPIDS OF
THE NUTS OF *Fagus orientalis*S. Sh. Mamedov, G. S. Safarova,
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The oriental beech — *Fagus orientalis* L. — belongs to the family Fagaceae A.B. [1], and its fruit forms a promising raw material for oil and is of great interest for researchers. We have found no information in the literature available to us on the fatty acid composition of the neutral lipids (NL) of the nuts of the eastern beech.

Eastern beech nuts were gathered in the Kel'badzhar (1) and Kakhi (2) regions of Azerbaidzhan at heights of 2200 and 1700 m above sea level, respectively.

Extraction of the ground nuts with petroleum ether (bp 40-60°C) [2] gave the dark yellow total NL with yields of 49.2 (1) and 50.1% (2) on the air-dry mass of the nuts. The compositions of the fatty acids (FA) were determined by GLC on a Chrom-5 chromatograph, using a 3.5 mm × 2.5 m column filled with poly(ethylene glycol succinate) (10%) on Celite 545;

TABLE 1

Acid	Whole nuts (1)	Kernels (1)	Whole nuts (2)	Kernels (2)
C _{14:0}	0.9	0.2	0.8	0.2
C _{14:1}	1.2	—	1.2	—
C _{15:0}	0.1	Tr.	1.1	0.1
C _{15:1}	1.1	—	0.9	—
C _{15:2}	Tr.	—	0.1	—
C _{16:0}	0.1	Tr.	Tr.	Tr.
C _{16:1}	8.6	8.5	8.4	8.6
C _{18:0}	Tr.	Tr.	Tr.	Tr.
C _{18:1}	38.8	46.4	38.6	47.5
C _{18:2}	37.0	34.8	36.8	33.3
C _{18:3}	3.5	3.5	3.6	3.9
C _{20:0}	6.6	6.0	6.0	5.8
C _{20:1}	2.1	0.6	2.5	0.6
Total acids	100.0	100.0	100.0	100.0
saturated	7.7	6.2	7.9	6.1
unsaturated	92.3	93.8	92.1	93.9

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column temperature 180°C, evaporator temperature 230°C, detector temperature 190°C; sensitivity $256 \cdot 10^{-10}$ A; rate of flow of carrier gas (ultrapure nitrogen) 30 ml/min, of hydrogen 26 ml/min, and of air 500 ml/min; recorder and chart speeds 1.5 and 0.3 cm/min; sample volume 0.3 μ l. The FA were identified from their relative retention times and by plotting graphs of the dependence of retention times on carbon atom numbers [3]. The results of the study are given in Table 1.

It can be seen from the results given that the FA composition of the nuts of the oriental beech is scarcely affected by the growth region, differences being observed only between the lipids of the whole nuts and those of the kernels. Thus, the lipids of the whole nuts contained 13, and those of the kernels 10, fatty acids. The bulk (about 76%) of the weight of the acids was represented by the 18:1 and 18:2 species. In the lipids of the whole nuts the amounts of these components were almost equal, while in the lipids of the kernels the 18:1 acid predominated.

Thus, the nuts of the oriental beech are characterized by high levels of lipids (up to 50.1%), and of unsaturated fatty acids (up to 93.9%).

REFERENCES

1. The Flora of Azerbaidzhan [in Russian], Vol. 3 (1961), p. 100.
2. A. I. Ermakov, V. V. Arasimovich, M. I. Smirnova-Ikonikova, N. Ya. Yarosh, and G. M. Lukovnikova, Methods for the Biochemical Investigation of Plants [in Russian], Leningrad (1972), p. 455.
3. G. Burchfield and E. Storrs, Biochemical Applications of Gas Chromatography, Academic Press, New York (1962) [Russian translation], Moscow (1964), p. 619.