OIL FROM THE SEEDS OF JUGLANS MANDSHURICA AND ANABASIS APHYLLA

A. U. Umarov, S. N. Burnasheva, and Kh. S. Makhmudova

Khimiya Prirodnykh Soedinenii, Vol. 6, No. 2, pp. 265–266, 1970

UDC 547.915.3

We have studied the oil of the seeds of Juglans mandshurica (family Juglandaceae—walnuts) and Anabasis aphylla (family Chenopodiaceae) [1]. The oil content of the kernel of the Juglans mandshurica seeds was 66.20% (grayish-yellow oil with a pleasant smell) and that of the Anabasis aphylla seeds 16.28% (dark green oil with a sharp herbaceous smell). The physical and chemical indices of the oils and the fatty acids are given in Table 1. The fatty-acid compositions of the oils, from GLC results, are given in Table 2.

Table 1

Index	Oil		Fatty Acids	
	Juglans mandshurica	Anabasis aphylla	Juglans mandshurica	Anabasis aphylla
Density, g/cm³	0.9214	0.9241	—	—
Refractive index	1.4770	1.4721	1.4743	—
Absolute viscosity, cP	0.8108	—	—	—
Saponification number, mg KOH/g	183.80	181.40	—	—
Neutralization number, mg KOH/g	—	—	201.66	202.30
Mean molecular weight	—	—	278.24	277.36
Iodine number	130.14	144.42	132.84	148.34
Thiocyanogen number	82.19	82.16	85.25	85.43
Content, % of unsaponifiables	0.42	6.42	—	—
phosphatides	0.04	0.32	—	—

The UV spectrum of the mixture of fatty acids of the oil of the Juglans mandshurica seeds showed the presence in it of 5.78% of acids with two conjugated double bonds. The glyceride composition of this oil, which we studied by a published method [2], is as follows (%): GlS_3 0.01; GlS_2U 0.60; $GlSU_2$ 13.29; GlU_3 86.10 (where Gl represents a glycerol residue, S a saturated acid, and U an unsaturated acid.

Table 2

Acid	Content, %	
	Juglans mandshurica	Anabasis aphylla
Caprylic	—	0.34
Capric	—	0.09
Lauric	—	0.32
Tridecanoic	0.62	—
Myristic	1.31	0.45
Palmitic	6.53	13.21
Stearic	3.19	2.10
Oleic	21.68	13.24
Linoleic	63.55	65.38
Linolenic	3.12	4.82
Arachidic	—	Traces
Behenic	—	

From the unsaponifiables fraction of the oil of Anabasis aphylla seeds we isolated a crystalline substance with mp 51.5–62° C, composition $C_{28}H_{58}$, identified by its IR spectrum as n-octacosane.

REFERENCES

1. The Flora of Uzbekhistan, Vol. 2 [in Russian], Tashkent, 1953, pp. 66 and 307.

2. A. L. Markman, T. V. Chernenko, and A. U. Umarov, Prikladnaya biokhimiya i mikrobiologiya [Applied Biochemistry and Microbiology], 5, no. 5, 616-619, 1969.

21 November 1969

Institute of the Chemistry of Plant Substances AS UzSSR