LITERATURE CITED

1. A. F. Palii, Genetic Aspects of Improving the Quality of Maize Grain [in Russian], Shtiintsa, Kishinev (1989), p. 23.
2. I. Cabulea, G. Neamtu, C. Ochesanu, and I. Illyes, Bull. Acad. Sci. Agric. For., 5 (1985).
3. C. O. Grogan and C. W. Blessin, Crop Sci., 8, No. 6, 730 (1968).
4. G. Britton, The Biochemistry of Natural Pigments, Cambridge University Press, Cambridge (1983) [Russian translation]: Mir, Moscow (1986), p. 44.
5. H. C. Kapoor and M. S. Naik, Indian J. Agric. Sci., 40, No. 11, 942 (1970).
6. J. W. White, F. P. Zscheile, and A. M. Brunson, J. Am. Chem. Soc., 64, 2603 (1942).

ESSENTIAL OIL OF Artemisia rubripes

M. A. Khanina, E. A. Serykh, T. P. Berezovskaya, and V. A. Khan

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Artemisia rubripes Nakai. is a perennial herbaceous plant with a vigorous epigeal part. It is found in the Maritime and Khabarovsk territories and Amur province. It grows on waste land, on roads, in desert places, on the banks of rivers, among undergrowth, and at the edges of forests, forming large thickets. It is possible to collect many tonnes of the raw material [1]. The herbage of this species of wormwood contains about 0.5% of essential oil [2]. The herbage of A. rubripes is recommended for use in perfumery and soapboiling and in the wine and liquor industry [1].

We gathered raw material for analysis in the flowering phase in the region of the Far Eastern Zonal Experimental Station of VILR [All-Union Scientific-Research Institute of Medicinal Plants] in Maritime Territory.

The essential oil obtained from the herbage by steam distillation consisted of a light mobile bluish liquid with a mild fairly attractive smell. According to our results, the herbage contained about 1.0% of essential oil. Constants: $D_{20}^{20} = 0.9308$, $n_D^{20} = 1.4703$, acid number 8.04; ester number 20.1.

The essential oil was freed from acids and phenols by generally accepted methods [3]. The terpene fraction was analyzed by GLC on a Chrom-41 instrument, with a 49 m glass capillary column having polymethylsiloxane as the stationary phase. The temperature of analysis was 60-240°C at a rate of programming of 5°C per minute. The components were determined from their relative retention times and with the aid of the method of additives.

The following were identified: α-pinene (2.87%), camphene (1.13%), sabinene (1.02%), β-pinene (0.80%), Δ^3-carene (0.90%), p-cymene (5.45%), limonene (19.67%), trans-β-ocimene (4.67%), terpinolene (2.69%), linalool (1.07%), camphane (14.09%), menthol (3.78%), bornyl acetate (1.62%), caryophyllene (0.51%), γ-muurolene (2.57%), caryophyllene oxide (1.62%), and ledol (0.52%).

This is the first time that information has been presented on the qualitative composition of the essential oil of A. rubripes growing on the territory of the Soviet Far East. The whole essential oil and the terpene fraction of this species possess an antimicrobial action.

LITERATURE CITED

1. N. I. Suprunov, P. G. Gorovoi, and Yu. A. Pankov, Essential-Oil Plants of the Far East [in Russian], Nauka, Novosibirsk (1972), p. 187.

Tomsk State Medical Institute. Novosibirsk Institute of Organic Chemistry, Siberian Branch, Russian Academy of Sciences. Translated from Khimiya Prirodnykh Soedinenii, No. 6, pp. 859-860, November-December, 1991. Original article submitted January 29, 1991.

0009-3130/91/2706-0759$12.50

2. Yu. A. Pankov, N. O. Suprunov, and P. G. Gorovoi, "Essential-oil plants of the Soviet Far East," in: Proceedings of a Conference on Questions of the Study and Utilization of the Plant Resources of the USSR: Abstracts of Lectures, Nauka, Novosibirsk (1968), pp. 160-161.
3. M. I. Goryaev and I. Pliva, Methods of Investigating Essential Oils [in Russian], Alma-Ata (1962), p. 750.

TRITERPENE GLYCOSIES OF Hedera taurica

VIII. TAUROSIDES F_1, F_2, AND F_3 AND A TRITERPENOID SULFATE

V. I. Grishkovets, N. V. Tolkacheva, A. S. Shashkov, and V. Ya. Chirva

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We have previously described the structures of weakly polar glycosides from the leaves of Crimean ivy [1-3]. The present communication is devoted to the establishment of the structures of taurosides F_1-F_3 and of the triterpenoid F_0.

According to TLC in the chloroform–methanol–ammonia (15:5:1) system, component F [1] was a mixture of four substances, designated as F_0, F_1, F_2, and F_3 in order of increasing polarity. Their preparative separation was achieved on silica gel with elution by chloroform–methanol–water (40:10:1). The methyl ester of F_0 (I), obtained by esterifying F_0 with diazomethane, after purification on silica gel with chloroform–methanol–ammonia (15:3:0.5), had mp 187-190°C, $[\alpha]_D^{20}$ +42° (c 2.0; methanol). The acid hydrolysis of (I) [4 N aqueous CF_3COOH–dioxane (1:1), 100°C, 2 h] showed the absence of sugars and permitted the identification of methyl oleanolate.

A comparison of the chemical shifts (CSs) of the signals of the C-atoms in the NMR spectrum of (I) with literature figures for oleanolic acid showed their closeness, although the CS with δ 84.7 ppm did not coincide with the CS either of the C-3 atom in a glycosylated oleanolic acid (88.9 ppm) [2] or that in free oleanolic acid (78.2 ppm) [4]. There were no other signals of carbon atoms in the spectrum of (I). It was obvious that the C_3–OH group was esterified with an inorganic acid. Qualitative analysis of a hydrolysate permitted the identification of the sulfate anion and an ammonium cation. IR spectrum of (I), ν_{max}^{KBr}, cm^{-1}: 3420, 3160 (NH_4); 1725 (C=O); 1630 (C=C); 1400 (NH_4); and 1230 (O=S=O). Consequently, (I) was the 3-(ammonium sulfate) of methyl oleanolate.

TABLE 1. Chemical Shifts of the Signals of the ^{13}C Atoms of Compound (I) (δ, ppm; O – TMS; C_5D_5N)

C-atom	Chem. shift	C-atom	Chem. shift	C-atom	Chem. shift
1	38,6	11	23,3	21	33,9
2	24,9	12	122,6	22	32,7
3	84,7	13	144,1	23	28,7
4	38,8	14	41,8	24	17,1
5	55,2	15	28,0	25	15,4
6	18,6	16	23,6	56	17,1
7	32,9	17	46,7	27	26,2
8	39,6	18	41,7	28	178,0
9	47,8	19	41,0	29	33,1
10	37,1	20	30,8	30	23,6
				—O—CH_3	51,5

The assignment of the signals between atoms 11 and 16 and also between atoms 7 and 22 has been made arbitrarily.

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