ESSENTIAL OILS OF THE BARK AND WOOD OF THE STEMS OF *Laurus nobilis*

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The essential oils of the leaves and stems of *Laurus nobilis* L. (Grecian laurel) scarcely differ from one another in chemical composition and the amounts of the components [1, 2].

There is no information in the literature on the composition of the essential oils of the bark and wood of the stems of Grecian laurel. We have studied the amounts and compositions of the essential oils of the bark and the wood of the stems of Grecian laurel growing in the Mayakovskii and Samtredia regions of the Georgian SSR.

The essential oils were isolated by the steam distillation method. The oil was obtained from the distillate by extraction with methylene chloride. The components of the essential oils were isolated by preparative GLC on the columns and under the conditions described previously [3]. The components isolated were identified by comparing their IR spectra with those given in the literature [4, 5]. Minor components were identified by adding known substances to the sample under investigation and chromatographing them on columns with stationary phases of different polarities. Analytical GLC was performed on the columns described previously [3].

Information on the amounts of essential oils in stems of various diameters and their bark and wood is given below (% on the dry weight)

	Up to 2 mm	2-4 mm	4-6 mm	6-12 mm
Stems	1.2	0.8	0.5	0.3
Bark	2.0	1.9	1.5	1.4
Wood	0.5	0.3	0.1	0.03

As we see, with an increase in the diameter and, consequently, the age of the stems the amount of essential oil in the wood falls considerably. The tendency to a decrease in the amount of essential oil is also characteristic for the bark, but to a considerably smaller degree.

In stems with diameters of up to 12 mm the wood and bark amount, on an average, to 70 and 30%, respectively, but their significance is not determined by their amount, since the levels of essential oils in them are different. The essential oil in the stems is mainly localized in the bark, and this practically determines the oil content and chemical composition of the essential oil of the stems.

The amounds of the components in the essential oils of stems with diameters after 12 mm and their bark and wood were as follows (% on the whole oil):

Component	Stems	Bark	Wood
α-Pinene	3.5	4.0	1.0
Camphene	0.2	0.3	Tr.
β-Camphene	3.6	4.3	0.3
Sabinene	8.7	7.6	15.3
Myrcene	0.8	1.0	0.2
α-Phellandrene	0.1	0.2	Tr.
Limonene	1.5	1.8	Tr.
β-Phellandrene	0.4	0.6	Tr.
1,8-Cineole	32.8	37.7	7.9
γ-Terpinene	0.2	0.3	Tr.
p-Cymene	0.4	0.5	Tr.
Terpinolene	0.1	0.2	Tr.
Linalool	6.6	6.6	6.2

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(continued)

Component	Stems	Bark	Wood
Terpinen-4-ol	7.0	6.8	8.4
β-Caryophyllene	0.4	0.7	0.7
α-Terpineol	0.5	0.3	1.9
α-Terpinyl acetate	20.5	17.3	44.8
Methyleugenol	3.2	3.1	3.8
Eugenol	2.2	1.7	5.0

The essential oils of the bark and wood differed considerably from one another with respect to the amounts of the components.

In the wood, as compared with the bark, the biosynthesis of terpenes is directed toward a sharp increase in the amount of α-terpinyl acetate, sabinene, eugenol, and α-terpineol and to a fall in the amount of 1,8-cineole, α- and β-pinenes, camphene, α- and β-phellandrenes, γ-terpinene, p-cynene, mycrene, and terpinolene. Linalool, β-caryophyllene, and terpinen-4-ol were present in equal amounts in the essential oil.

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MONO- AND SESQUITERPENOIDS OF THE OLEORESIN OF *Picea schrenkiana*

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Continuing a systematic study of the chemical composition of the oleoresins of conifers of the family Pinaceae, we have determined the composition of the volatile components of the oleoresin of *Picea schrenkiana* Fisch. (Schrenk spruce) gathered in July, 1980 in the Aflatun gorge (Western Tien-Shan) at a height of 2000-2500 m above sea level.

The neutral part of the oleoresin of this species contains ~40% of hydrocarbons and ~60% of oxygen-containing compounds. The following composition of the hydrocarbon fraction (%) was found by the method of internal normalization (GLC, OV-17, 50 m, 80°C): α-pinene, 11.7; β-pinene, 3.1; 3-carene, 46.5; dipentene, 19.9; β-phellandrene, 1.3; terpinolene, 3.1; camphene, sabinene, and p-cynene, 0.2% each; cis-α-bisabolene, 1.3; and diterpenes, 13. The high amount of 3-carene, as also in Semenov's fir [1] growing in the same region, is apparently due to the severe high-mountain conditions, as has also been reported for other mountain species [2].

The neutral oxygen-containing compounds of the oleoresin consisted mainly of diterpenoids, monoterpene compounds making up 2% of this fraction and oxygen-containing sesquiterpenoids not being detected in the oleoresin even in trace amounts. Among the monoterpenoids the following were identified by GLC (OV-101, 50 m, 80-180°C/3°C per minute) and also by adsorption chromatography and spectral methods (%): linalool, 45; geraniol, 21.2; α-terpineol, 13.8; geranyl acetate, 9; sabinene hydrate, 4.6; and, in very small amounts (less than 1%), methylchavicol, borneol, terpineol-4, and thymol methyl ether.

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