VANILLIN AND VERATRALDEHYDE FROM ABIES SIBIRICA

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The hydroxyaromatic extractive substances of the wood of Abies sibirica (Siberian fir) have not been studied previously.

From a methanolic extract of the ground wood of this fir (Irkutsk region; 15.7 kg with a moisture content of (17.18%), by the successive elimination of the petroleum-ether-, water-, and benzene-soluble substances we obtained a fraction of compounds of phenolic nature (20 g; 0.15% of the absolutely dry wood).

By percolation on cellulose (1 : 20) with a mixture of chloroform and methanol (sp. gr. 1.31) we isolated a group of compounds consisting of six components (4.0 g). Chromatography on silica gel (1 : 100) and elution with chloroform yielded a fraction (0.4 g) enriched in two components (A and B).

The substances were separated in the individual state by preparative chromatography on a fixed layer of silica gel in chloroform. They were desorbed with ethanol.

Substance A (0.0875 g) gave an orange coloration with Pauli's reagent, mp 81–82° C (from ethanol, $\lambda_{max}^{C_2H_5OH}$ 230, 280, 310 mμ (lg ε 3.84; 3.70; 3.69), $\lambda_{max}^{C_2H_5OH+NaOH}$ 250, 290, 350 mμ. The IR spectrum of substance A had bands at, cm^{-1}: 1520 and 1590 (aromatic ring), 1670 and 2860 (aldehyde group), and 3200 (associated hydroxyl groups). The substance was identified as vanillin.

Substance B (0.2625 g) gave no coloration with Pauli's reagent, mp 42–43° C (from ethanol), $\lambda_{max}^{C_2H_5OH}$ 230, 275, 310 mμ (lg ε 4,45; 4,3; 4,2), no bathochromic shifts of the absorption maxima in an alkaline medium were observed. The IR spectrum of substance B lacked absorption in the 3000–3600 cm^{-1} region. This substance was identified as the methyl ether of vanillin.

In addition to substances with a phenolic nature, from the partially evaporated initial methanolic extract we isolated a precipitate which proved to be β-sitosterol, which has been isolated previously from an acetone extract of fir [1].

REFERENCE

1. A. I. Lisina, V. I. Finogenova, L. N. Vol'skii, and V. A. Pentegova, Izv. Sib. otd. AN SSSR, ser. khim., issue 2, no. 4, 1967.

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