OXYGEN-CONTAINING MONO- AND SESQUITERPENOIDS OF THE OLEORESIN OF *Picea koraiensis*

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We have previously studied the mono- and sesquiterpene hydrocarbons [1] and the diterpenoids and resin acids [2] of the oleoresin of *Picea koraiensis* Nakai (Korean spruce). Continuing our investigation of the oleoresin, we have determined the composition of the fraction of mono- and sesquiterpenoids obtained by fractional distillation of the oxygen-containing compounds of the neutral part of the oleoresin (bp 100-160°C/2 mm Hg, 0.7% of the oleoresin). By chromatography of the fraction (5 g) on silica gel and silica gel impregnated with 20% of silver nitrate we isolated individual terpenoids, the identification of which was carried out by comparing their spectral characteristics with those of authentic samples.

The main component of the fraction studied was α-terpineol (0.97 g). Of the other monoterpenoids we isolated borneol (0.16 g), pinan-1-ol (0.08 g), methyleugenol (0.12 g), sabinene hydrate (0.07 g), and a mixture of α-terpenyl acetate and bornyl acetate (0.18 g; 1 : 1 according to its PMR spectrum).

Among the oxidized sesquiterpenoids, nerolidol (0.46 g, $[\alpha]_D^{27} - 1.4°$), cubebol and epicubebol predominated, the last two compounds being determined as a mixture (0.32 g; 1 : 1, PMR). Small amounts were found of glehnol (0.08 g, $[\alpha]_D^{27} + 15°$), first isolated from the oleoresin of the Sakhalin spruce (*Picea glehni*) [3], epicubenol (0.07 g), ajanol (0.11 g, mp 62°C), first detected by Babkin et al. [4] in the oleoresin of the Yeddo spruce, and 5S,8S-germacra-1E,6E-dien-5-ol (0.16 g), likewise found in the Yeddo spruce [5].

In addition to mono- and sesquiterpenoids, the fraction contained about 10% of diterpene alcohols the composition of which was similar to that found previously [2].

Thus, in addition to the terpenoids found previously [1, 2], in the oleoresin of the Korean spruce we have identified 14 oxygen-containing mono- and sesquiterpene compounds.

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