

BRIEF COMMUNICATIONS

PHENOLIC ACIDS AND THEIR GLYCOSIDES FROM THE OLEORESIN OF *Picea obovata* AND *B. ajanensis*

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Evaporated methanolic extracts of the oleoresins of the Siberian spruce and the Jeddo spruce were treated successively with diethyl ether and butanol. By preparative chromatography on a polyamide sorbent with elution by water, the ethereal extracts yielded enriched fractions containing free phenolic acids.

The preliminary determination of the composition of the phenolic acids was performed by PC (2% acetic acid) and TLC on "Silufol" plates [methanol-chloroform (5:95)]. The phenolic acids were identified by GLC in the form of the trimethylsilyl derivative (Table 1) using a method developed in our laboratory by V. I. Lutskii [1]. The relative retention times of the phenolic acids isolated and of the corresponding authentic samples agreed well. The analysis was performed on a Tsvet-4 chromatograph with a flame-ionization detector using a 300 × 0.3 cm column filled with 5% of SE-30 on Chromaton N-AW-HMDS with helium as the carrier gas at a temperature of the column of 212°C and of the evaporator of 320°C.

When the butanolic extracts were percolated on polyamide sorbent, fractions of glycosides of phenolic acids were isolated. After hydrolysis with 10% HCl all the above-mentioned phenolic acids were found in the case of the Jeddo spruce and p-hydroxybenzoic, vanillic, p-coumaric, and ferulic acids were found in the case of the Siberian spruce (see Table 1). Only glucose was identified in the hydrolyzate. The attachment of the glucose to the phenolic hydroxyls was confirmed by the absence of alkaline hydrolysis. The results of enzymatic hydrolysis with dextrinase showed a β -glucosidic bond.

Thus, p-coumaric and ferulic acids and the β -glucosides of p-hydroxybenzoic, vanillic, p-coumaric, and ferulic acids have been identified in the oleoresin of the Siberian spruce.

p-Hydroxybenzoic, vanillic, protocatechuic, p-coumaric, and ferulic acids, both in the free form and in the form of the β -glucosides, have been found in the oleoresin of the Jeddo spruce.

TABLE 1. Relative Retention Times (RRTs) of the TMS Derivatives of Phenolic Acids

Phenolic acids	RRT	<i>Picea obovata</i> L e d e b	<i>Picea ajanensis</i> F i s c h
p-Hydroxybenzoic	0,62	+ †	+
Vanillic*	1,00	+ †	--
Protocatechuic	1,29	—	+
p-Coumaric	1,89	+	+
Ferulic	3,13	+	+

*Retention time of vanillic acid
4.62 min.

† Present only in the form of the
 β -glucosides.

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This is the first time that the hydroxybenzoic and hydroxycinnamic acids and their glycosides that we have identified have been found in the oleoresin of species of the genus Picea.

LITERATURE CITED

1. N. A. Tyukavkina, A. S. Gromova, V. I. Lutskii, and I. S. Chubarova, *Khim. Prirodn. Soedin.*, 78 (1974).