

PHENOLIC ACIDS AND THEIR GLYCOSIDES
FROM THE PHLOEM OF *Picea jezoensis*
AND *P. koraiensis*

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From the ether-soluble fraction of extracts of the phloem of *Picea jezoensis* Carr. and *P. koraiensis* Nakai (Yeddo spruce and Korean spruce) obtained by a procedure described previously [1], by treatment with a saturated solution of sodium bicarbonate [2] we have isolated the total phenolic acid fractions. The acids were identified by GLC of their trimethylsilyl derivatives under the conditions given previously [2] (Table 1).

From the ether-insoluble fraction of the extracts, by chromatography on polyamide (in the aqueous methanol system), we obtained fractions of glycosidated phenolic acids. The GLC analysis of the acid fraction of the hydrolyzate showed that the aglycones contained the same phenolic acids that were present in the extract in the free state (see Table 1). Only D-glucose was found in the neutral part of the hydrolyzate, this being identified by paper chromatography [butan-1-ol-pyridine-water (4:6:3) and (10:3:3) systems by the descending and ascending methods, respectively]. A β -linkage was confirmed by enzymatic hydrolysis with *Aspergillus oryzae*.

Thus, in the phloem of the Yeddo and Korean spruces there are phenolic acids of the hydroxybenzoic and hydroxycinnamic types with the model of substitution that is characteristic for coniferous plants (p-hydroxy, 3,4-dihydroxy, and 4-hydroxy-3-methoxy). In addition to free phenolic acids they also contain their glycoside derivatives.

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

TMS derivatives of the phenolic acids	Yeddo spruce				Korean spruce			
	196°		226°		196°		226°	
	free	glyco- sidic	free	glyco- sidic	free	glyco- sidic	free	glyco- sidic
p-Hydroxybenzoic	0,49	0,4 ^o	—	—	0,51	0,49	—	—
Vanillic	0,81	0,80	—	—	0,79	0,80	—	—
Protocatechuic*	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
p-Coumaric	—	—	1,38	1,36	—	—	1,36	1,35
Ferulic	—	—	2,28	2,25	—	—	2,23	2,24

*The retention time of protocatechuic acid was taken as 1 for both temperatures.

LITERATURE CITED

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