

BRIEF COMMUNICATIONS

PHENOLIC CARBOXYLIC ACIDS OF VINE ROOTS

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Phenolic compounds are ascribed great importance in the physiology of plant diseases and in the immunity of plants to them [1-3]. It is assumed that the resistance of a plant

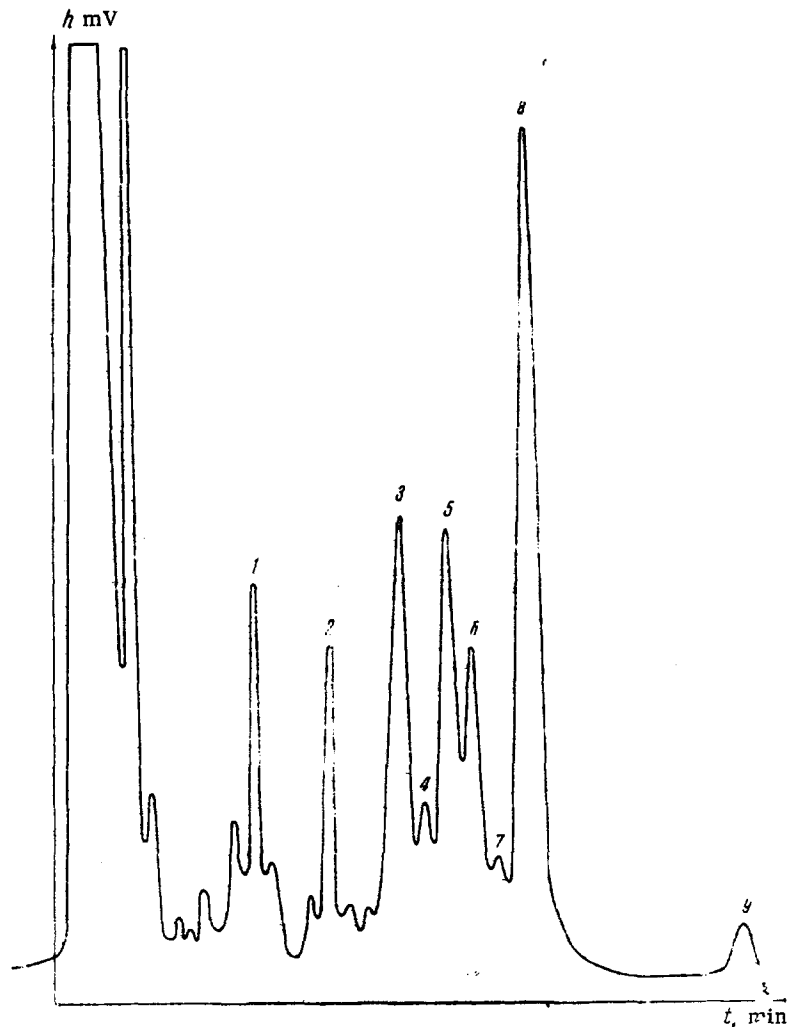


Fig. 1. Chromatogram of the phenolic carboxylic acids isolated from healthy vine roots of the variety Shasla belaya [Chasselas blanc]: 1) salicylic 2) p-hydroxybenzoic; 3) shikimic; 4) quinic; 5) gallic; 6) ferulic; 7) caffeic; 8) sinapic; and 9) chlorogenic.

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to infection with a particular pathogen is connected with the presence of specific phenolic compounds or a potential capacity for their formation under the action of the pathogen.

In this communication, we give the results of an investigation of the composition of the phenolic carboxylic acids in healthy and phylleroxa-infected roots of a number of varieties of vine of the species *Vitis vinifera* L. possessing different resistances to phylleroxa: unresistant — Shasla belaya and Muskat belyi — and relatively resistant — Rkatsiteli and Mtsvane kakhetskii.

Two-year plants were grown from cuttings by the hydroponic method in gravel culture with Chesnokov's nutrient solution and they were artificially infected with phylloxera. At a period 3-4 months after infection, the phenolic compounds were isolated from the moistened roots of the primary structure by Zaprometov's method [4] with the omission of the stage of chloroform treatment, since there are no green pigments in the roots. The amounts of phenolic carboxylic esters, in the form of their trimethylsilyl derivatives were determined by gas-liquid chromatography in the extracts obtained. The analysis was performed on a "Khrom-3" instrument with a flame-ionization detector using a column 15 × 3 mm containing 5% of silicone SE-30 on Chromaton N-AW-DMCS (0.2-0.25 mm). The regime of programming the temperature from 100 to 270°C at the rate of 3°C/min was used with a temperature of the evaporator of 290°C.

The components were identified from their retention times, and also with the aid of marker acids.

The following phenolic carboxylic acids were found in all the extracts: salicylic, p-hydroxybenzoic, shikimic, quinic, gallic, ferulic, caffeic, sinapic, and chlorogenic (Fig. 1). It may be mentioned that, in comparison with healthy roots, both for the nonresistant and the relatively resistant varieties, the roots of the vines infected with phylleroxa contained a larger amount of chlorogenic acid, which agrees with the results obtained on plants of other species [5, 6]. So far as concerns the other phenolic carboxylic acids, no definite tendency whatever to a change in their amount on infection with phylleroxa was detected. Investigations in this area will be continued.

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