

INFLUENCE OF CHLOROCHOLINE CHLORIDE ON THE AMOUNT OF ANTHOCYANINS  
IN THE FRUIT OF *Aronia melanocarpa*

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We have previously [1] reported the secretion and accumulation of anthocyanins in the ripe fruit of *Aronia melanocarpa* (black chokeberry) under the action of trace elements. Continuing a study of the role of growth regulators in the biosynthesis of biologically active substances of this plant, we set ourselves the aim of studying the influence of chlorocholine chloride (the preparation TUR) on the accumulation of anthocyanin substances in the ripe fruit of the black chokeberry and investigating their qualitative composition.

For the experiment we used plants 10-15 and 5-8 years old. They were treated with 0.3 and 0.6% solutions of chlorocholine chloride with respect to the active substance and twice with a 0.3% solution (0.3% $\times$ 2) in a plantation of the "Kritsy" sovkhoz (communal farm), Spasskii region, Ryazan' oblast, in the morning hours: the first treatment at the beginning of the period of intensive growth of the shoots, and the second and third at intervals of 12-15 days — after flowering (the consumption of the solution of the preparation for the young plants was 150-200 ml and for the fully grown one 500-1000 ml per plant).

The anthocyanins were isolated from the crude fruit with 1% HCl in methanol (1:99) [2]. The extract was evaporated in vacuum and was investigated by radial paper chromatography (radius of the circle 9 cm, Leningrad "M" ["slow"] paper, density 85 g/m<sup>2</sup>) in the n-butanol-acetic acid-water (4:1:5) system. The time of chromatography was 6-8 h at a temperature of 19-21°C. In all variants of the experiment, as previously with trace elements [1], three anthocyanin substances were detected having R<sub>f</sub> 0.34-0.36, 0.43-0.45, and 0.66-0.68 (respective UV spectra,  $\lambda_{\text{max}}^{\text{CH}_3\text{OH}+1\% \text{HCl}}$  531, 535, and 537 nm [1, 3]. After the hydrolysis of these substances with 2 N HCl for 30 min [4] and rechromatography of the hydrolysis products isolated by means of isoamyl alcohol, the three anthocyanin substances formed the same aglycone, which was identified as cyanidin, having R<sub>f</sub> 0.60-0.62 and the UV spectra  $\lambda_{\text{max}}^{\text{C}_2\text{H}_5\text{OH}}$  545 nm and  $\lambda_{\text{max}}^{\text{CH}_3\text{OH}+1\% \text{HCl}}$  542 nm [1, 2, 5].

The amounts of the anthocyanins present in the ripe fruit collected in 1977 and 1978 were determined as cyanidin by the photolorimetric method [6]. The results of the analysis (in % on the dry substances) were treated by the method of the statistics of variation [7].

It was established that, as compared with the control variant (3.66 $\pm$ 0.16), chlorocholine chloride in concentrations of 0.6, 0.3, and 2 $\times$ 0.3% increased the amount of anthocyanins in the ripe fruit by 26.2, 28.9, and 30.0%, respectively (4.62 $\pm$ 0.25, 4.72 $\pm$ 0.23, and 4.76 $\pm$ 0.26), but there was no appreciable difference in their accumulation by the young and fully grown plants.

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