

OCCURRENCE AND VARIATION OF SOME METALLIC ELEMENTS IN LINGONBERRY (*VACCINIUM VITIS-IDAEA L.*) AND SOIL

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The geographic distribution of lingonberries (*Vaccinium vitis-idaea L.*) in the world extends from Scandinavia to North America. In 1962, the first lingonberry plantations were created in Sweden for research studies. The climatic conditions in Latvia are favourable for the growth of these plants. The chemical composition of lingonberries is characterized by a diverse content of macro and micro elements.

The use of various berries, both wild and cultivated, in medicine, food production, pharmacology, and cosmetology are becoming increasingly popular. In recent years, the use of lingonberries in the production of medicinal products and nutritional supplements has been actively researched, not only lingonberry berries but also their components (leaves and roots) are being analysed.

The aim of our research was to evaluate the variation of some metallic elements in lingonberries (*Vaccinium vitis-idaea L.*) depending on their growing place and soil. The roots of lingonberry have also been collected to study the transfer of metallic elements from soil to plants. Lingonberry (berries and roots) and soil samples were collected in September 2019 in two different areas:

- 1) Garkane pines forest. In this area are located Riga-Lugazi railway line, where passenger trains pass through);
- 2) Vecumu forest in Ziguri parish. The territory is located ~8 km from the Latvia-Russia border.

The lingonberry samples were air-dried and digested using dry and microwave assisted digestion method.

The forest soil is very acidic ($\text{pH}_{\text{KCl}} 3.4 - 4.0$) at the places of lingonberry growth sites. The low content of Zn and Cu in the soil indicates the mobility of these elements and the leaching into the deeper layers of the soil.

Iron content of digested lingonberry samples and soil was determined both photometrically and by flame atomic absorption spectrometry (FAAS). Iron content in soil varies in wide range in the Garkalne and Vecumu forest ($8 \text{ mg} \cdot \text{kg}^{-1}$ to $1250 \text{ mg} \cdot \text{kg}^{-1}$), but in lingonberries iron content is similar $10 \text{ mg} \cdot \text{kg}^{-1}$.

Zinc and copper content were determined by flame atomic absorption spectrometry. The content of copper and zinc in lingonberries are similar and does not depend from sampling site and soil chemical composition. Copper and zinc content in lingonberries are as follows: copper $\sim 4 \text{ mg} \cdot \text{kg}^{-1}$ and zinc $\sim 10 \text{ mg} \cdot \text{kg}^{-1}$. For determination of other microelements, the ICP-MS analysis method was used.