

THE INVESTIGATION TOTAL CONTENT OF PHENOLIC COMPOUNDS IN THE LINGONBERRY LEAF

Maslov O. Yu., Komisarenko M. A., Kolisnyk S. V.

National University of Pharmacy, Kharkiv, Ukraine

Introduction. One of the richest plant sources of phenolic compounds is lingonberry. Lingonberry (*Vaccinium vitis-idaea* L.) is an evergreen shrub of the *Ericaceae* family. The distribution area is in Russia, the Baltic countries, the northern regions of Ukraine and Belarus, and Canada. The chemical composition of lingonberry leaves is represented by a variety of biological active substances (BAS): hydroquinone derivatives (arbutin), catechins (epicatechin, (+)-catechin), flavonoids (rutin, quercetin), hydroxycinnamic acids (caffeic acid) and organic acids (citric acid) [1]. Owing to rich chemical content of *V. vitis-idaea* leaf, extract has possessed variety of pharmacological activity: antimicrobial, antioxidant, anti-inflammatory, diuretic and neuroprotective actions. Therefore, investigation the phytochemical composition of lingonberry leaf is a perspective topic for today.

Materials and methods. The object of the study was the lingonberry leaf. The leaf was collected in October 2021 in the Kostivtsi village, Zhutomyr region, Ukraine (50.329417, 29.536861). The quantitative determination of the total phenolic compounds was carried out by the following was 2.0 g (exactly weighed) of the crushed raw material was placed in a 100 mL ground glass flask, poured with 40 mL of 60% ethanol and left for 1 hour in a boiling water bath. After cooling, the solution was quantitatively transferred to a 50.0 mL volumetric flask, the volume was brought up to the mark with the same solvent (solution A). 1.0 mL of solution A was added to a volumetric flask with a capacity of 50.0 mL, brought up to the mark with 60% ethanol. Then an aliquot of 1.0 mL of the prepared solution was taken, placed in a volumetric flask for 50.0 mL and bring the volume up to the mark with 60% ethanol (solution B). In a 25.0 mL flask, 1.0 mL of solution B, 1.0 mL of phosphoromolybdenum-tungsten reagent, 10.0 mL of water were mixed and the volume was made up to the mark with a solution of 290 g/L sodium carbonate. After 30 minutes, the optical density was measured at 760 nm, water was used as a compensating solution. The quantitative content of the sum of phenolic compounds, in terms of gallic acid, (X, %) was calculated according to the formula:

$$X = \frac{C_x \cdot K_{dil} \cdot 100}{m_n \cdot (100 - W)},$$

C_x – concentration of gallic acid according to the calibration graph, $C \cdot 10^{-6}$, g/mL; K is the dilution factor; W – weight loss during drying, %; m_n is mass of sample, g.

Results and discussion. The total content of phenolic compounds was $4.26 \pm 0.10\%$ expressed as gallic acid in lingonberry leaf.

References

1. Maslov, O. Y., Komisarenko, M. A., Kolisnyk, S. V., Antonenko, O. V., Kolisnyk, O. V., Kostina, T. A. (2021). The study of the qualitative composition and the quantitative content of phenolic compounds in dietary supplements with lingonberry. *J Org Pharm Chem*, 19(4(76)), 40–46.