A STUDY OF FLAVONOIDS OF THE UNDERGROUND ORGANS OF SYRINGA VULGARIS BERRYER VARIETY

Vlasova O. D.
Scientific supervisor: assoc. prof. Popyk A. I.
National University of Pharmacy, Kharkiv, Ukraine
aicnc@mail.ru

Introduction. Flavonoids are widespread in the plant world. They are mainly found in the epidermal cells of plant fruits, flowers, seeds, shoots and roots. This group of biologically active substances are found in fungi, lichens, algae.

More than 4000 different substances of flavonoid nature, isolated from plant material, are known now. Flavonoids have a wide range of biological effects antioxidant, antitumor, antianginal, antiallergic, anti-inflammatory, radioprotective are among them. They also have P vitamin activity.

Aim. Previous studies have shown the presence of flavonoids in the flowers, leaves and bark of *Syringa vulgaris* Berryer variety (lilac species). The aim of our study was to investigate qualitative and quantitative content of flavonoids in the underground organs of *Syringa vulgaris* Berryer variety.

Materials and methods. Raw materials were harvested in autumn of 2014 and 2015 in the botanical garden of the V. N. Karazin Kharkiv National University.

Thin-layer, paper chromatograpy and well-known qualitative reactions were applied to determine the qualitative composition of flavonoids in the underground organs of *Syringa vulgaris* Berryer variety. N-butanol-acetic acid-water (4:1:2), 5%, 15%, 30% acetic acid were used as mobile phases. Chromatograms were analyzed in daylight and UV-light before and after treatment with chromogenic reagents.

Quantitative determination of flavonoids was carried out spectrophotometrically on the Mecasys Optizen POP (Korea) device after reaction with 2% alcohol solution of aluminum chloride.

Extraction of the sum of biologically active substances (BAS) from the raw material was carried out with 70% ethanol. The shredded raw material (50.0 g) was placed into a ground glass flask and treated with 150 ml of purified water. The extraction was performed for 5 times at 100°C for 30 minutes. The obtained extracts were combined, concentrated to a volume of 200-250 ml, refrigerated, filtered through a paper filter into the 250 ml volumetric flask. Then solution was adjusted to the mark with purified water for getting the right volume (solution A).

Solution A (2.0 ml) was placed into a volumetric flask with a capacity of 25 ml, then 2.0 ml of a 3% solution of aluminum chloride in 96% ethanol was added and mixed. The optical density of the resulting solution was measured after 30 minutes. Solution containing 2.0 ml of solution A was added to a volumetric flask with a

capacity of 25 ml and adjusted to the mark with 96% ethanol used as a compensation solution. The optical density of Pharmacopoeial standard solution of rutin was measured in parallel under the same conditions: 0.01 g of rutin was placed into a volumetric flask with a capacity of 25 ml, dissolved in 96% ethanol, the volume of the solution was adjusted with 96% ethanol to the mark and mixed. 2.0 ml of a 3% solution of aluminum chloride in 96% ethanol was added to 1 ml of the resulting solution and the volume of the solution was adjusted with 96% ethanol to the mark. The optical density of the resulting solution was measured after 10 minutes. The optical density was measured on the spectrophotometer at a wavelength of 420 nm using a cuvette with a layer thickness of 10 mm. The content of sum of flavonoids was determined in recalculation for rutin.

The content of sum of flavonoids (X,%) in the recalculation for rutin was calculated by the formula:

$$X = \frac{A \cdot m_0 \cdot 100 \cdot 100 \cdot 100}{A_0 \cdot m \cdot 100 \cdot (100 - W)};$$

where A – optical density of test solution;
A_0 – optical density of Pharmacopoeial standard solution of rutin;
m_0 –weight of rutin, g;
m – mass of raw materials, g;
W – mass loss during drying of raw materials, %.

Results and discussion. The chromatographic analysis showed that the underground organs of *Syringa vulgaris* Berryer variety contain rutin and luteolin. As a result of the studies, it was found that the content of flavonoids in the underground organs of lilac of the studied variety was 0.14±0.08%.

Conclusions. Qualitative and quantitative analysis of the flavonoids of the underground organs of *Syringa vulgaris* Berryer variety was carried out. The conducted studies have shown the presence of flavonoids in the raw material. The results of the studies showed the perspective for further study of the underground organs of the *Syringa vulgaris* Berryer variety. Results will be used for new phytomedication development.