

RESEARCH OF QUANTITATIVE VALUE AMOUNT OF γ – PIRON OF IRIS HUNGARICA AND IRIS SIBIRICA LEAVES

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Introduction. Plants of genus *Iris* are poorly understood and known only by decorative importance. In folk medicine iris was used as an analgesic, enveloping, expectorant, as well as a flavoring in the confectionery industry.

In the world there are more than 250 types of irises, about 13 species – in the territory of Ukraine.

According to the literature it is known that in the leaves of *iris* contain phenol carbonic acid: coffee, sinapic, *n* - coumaric, ferulic; flavonoids – quercetin; Ascorbic acid, also have xanthoness, flavonoids, and isoflavones.

The biological activity of plants of genus *Iris* caused the presence of various groups of biological active substances, so they exhibit anti-inflammatory, analgesic, astringent, hemostatic, cardiogenic, anti-viral activity. Of particular importance has xanthoness, namely mangiferin, which has immunostimulatory and antiviral effect.

Aim. Research of quantitative value amount of γ -piron of plants of genus *Iris*.

Materials and methods. The objects of the study were the *Iris hungarica* leaves, harvested on May, 2014, and *Iris sibirica*, harvested on September, 2014 in N. N. Gryshko National Botanical Garden of the National Academy of Sciences of Ukraine, Kiev (Ukraine).

Previously we conducted a qualitative analysis of the studied objects by paper chromatography. On chromatography paper «Filtrak FN- 4» was applied 70% alcohol – aqueous extracts of irises leaves and then placed in a system of solvent: I – direction – *n*-butanol – acetic acid – water (4: 1: 2); II direction – 15% acetic acid.

After passage, the chromatogram was dried and viewed in visible and UV-light. Spots, that are characteristic for xanthoness, had a yellow color, after tilling by ammonia vapors became yellow-orange, and after tilling by solution of 3% FeCl₃ – green color.

Quantitative determination of the content of xanthoness in the feed conducted by spectrophotometry at 369 nm in the re-calculation of mangiferin.

About 2.5 g the crushed material was placed in a flask capacity of 250 ml and extracted with 80% ethanol. After obtaining the extract was treated with chloroform three times by 10 ml. The purified extract was transferred into a volumetric flask of 50 ml and adjusted to the mark by 80% ethanol. After 1 ml of solution was transferred into a flask of 25 ml and volume of solution was adjusted to mark by the same solvent.

The optical density was measured on a spectrophotometer 60 S UV - Visible, Thermo Scientific (USA) at a wavelength of 369 nm in a cuvette with a layer thickness of 10 mm. Calculation of quantitative content of xanthenes in the re-calculation of mangiferin conducted by the formula:

$$X = \frac{A \times 50 \times 25 \times 100}{E_{1CV}^{1\%} \times m \times 1 \times (100 - W)}, \text{ where:}$$

A – the optical density of test solution;

$E_{1CV}^{1\%}$ – specific absorption rate of mangiferin (295) at a wavelength of 369 nm;

m – mass of the sample, g;

W – moisture of feed, %.

Results and discussion. Statistical analysis of the results was conducted in accordance with the requirements of the State Pharmacopeia of Ukraine, the 1st issue, supplement 1, p. 5.3 in Excel XS application.

Iris hungarica

m	n	X_i	X_{cp}	S^2	S_{cp}	P	t(P, n)	confidence interval	$\varepsilon_{\%}$
1	2		3	4	5	6	7	8	9
5	4	1,65	1,644	0,000930	0,013638	0,9	2,13	1,64 ± 0,03	1,76
		1,66							
		1,63							
		1,60							
		1,68							

Iris sibirica

m	n	X_i	X_{cp}	S^2	S_{cp}	P	t(P, n)	confidence interval	$\varepsilon_{\%}$
1	2		3	4	5	6	7	8	9
5	4	1,30	1,29	0,000250	0,007071	0,9	2,13	1,29 ± 0,02	1,1675
		1,27							
		1,31							
		1,28							
		1,29							

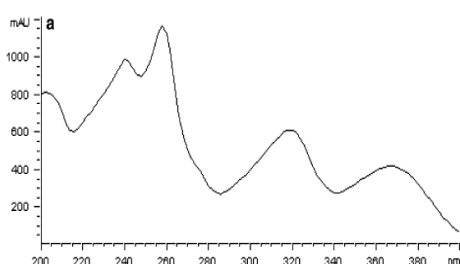


Fig. UV-spectrum of alcohol solution of *I. hungarica* leaves (96% ethanol)

UV-spectrum has 4 absorption maxima, which is typical of xanthenes. As a result of quantitative determination of xanthenes found that the leaves of *I. hungarica* content $1.64 \pm 0.03\%$, *I. sibirica* – $1.29 \pm 0.02\%$, in the re-calculation of mangiferin.

Conclusions. According to the results of previous studies, we can conclude that in the leaves of plants of genus *Iris* content xanthenes more than in the underground organs.