Krechun[1] Anastasiya, Mykchailenko[2] Olga, Kovalev[1] Vladimir

PRIMARY SCREENING OF COMPOSITION OF *IRIS HUNGARICA (WALDST ET KIT.)* THE BIOLOGICAL ACTIVE SUBSTANCES

1 Department of Pharmacognosy, National Pharmaceutical University, Kharkov, Ukraine.
2 Department of Botany, National Pharmaceutical University, Kharkov, Ukraine.

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Resume: the article submission results of the determination of biologically active substances Iris hungarica leaves and rhizomes. In leaves of *Iris hungarica* we identified flavonoids and isoflavonoids, hydroxycinnamic acids, xanthones. In *Iris hungarica* rhizome we established the presence of isoflavones, hydroxycinnamic and phenolic acids, xanthones.

Relevance. The chemical composition of *Iris hungarica (Waldst Et Kit.)* is represented by different classes of biologically active substances, which confirms the increased recent scientific interest of the genus *Iris*. Of particular importance are the phenolic compounds represented by flavones, flavonols, isoflavones, xanthones, coumarins, hydroxycinnamic acid. High biological activity of phenolic compounds has led to an interest in the elaboration and allocation of individual substances and also a growing number of scientific publications [2].

Iris hungarica – the representative of genus *Iris*, *Iridaceae* family – common in Ukraine, the Mediterranean, the Caucasus, Central and Eastern Europe as a wild plant and widely cultivated through own decorative qualities. Despite the large resource base and area of growth, the plant is little studied. According to the literary sources *Iris hungarica* contains organic, phenolcarbonic, hydroxycinnamic acids, tannins, saponins, xanthones, polysaccharides. There is an essential oil in the rhizome. Also there is evidence of use this plant in the folk medicine as anti-inflammatory, enveloping, analgesic means [4].

Aim: identification of phenolic compounds in the leaves and rhizomes of *Iris hungarica*.

Tasks: To conduct primary chromatography analysis, to establish component composition of biological active substances, to draw conclusions about the chemical composition of *Iris hungarica* leaves and rhizomes.

Materials and methods: the objects of study were leaves and rizomes of *Iris hungarica* harvested in spring 2014 and autumn 2015 N. N. Gryshko National Botanical Garden of the National Academy of Sciences of Ukraine, Kiev (Ukraine). For the preliminary analysis used paper chromatography method. The separation passed in the solvent system: the I direction - BAW (butanol - acetic acid - water) (4: 1: 2), II direction - 15% acetic acid on a paper of the brand «Filtrak FN4», which was applied 70% alcohol extract of leaves and rhizomes of *Iris hungarica*. Detection zones substances on a chromatogram was performed in the visible and ultraviolet light before and after treatment of ammonia vapors.

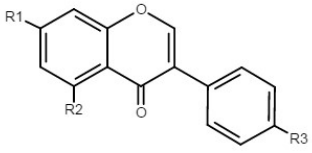
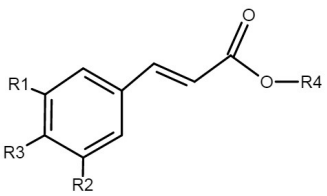
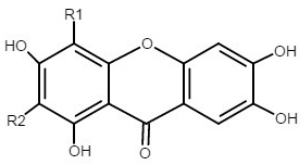
For determination component composition of the extracts of leaves and rhizomes of *Iris hungarica* we used the method of paper chromatography with reliable samples of flavonoids and isoflavones. Preliminarily alcoholic extracts of leaves and rhizomes of *Iris hungarica* were hydrolyzed: to obtained extracts we added a 5% sulfuric acid (1: 5) and heated in a water bath for 1 hour. After cooling aglycones were extracted with ethylacetate, followed extracts were washed with distilled water to remove excess acid. The ethylacetate extracts of *iris* and reliable samples were chromatographed in system HAW (chloroform – acetic acid – water) (13: 6: 1). After passing chromatogram substances zone viewed in visible and UV light.

To determine component composition of hydroxycinnamic acids 70% alcohol extract of *Iris hungarica* leaves and rhizomes and reliable samples of hydroxycinnamic acids were chromatographed in system 2% acetic acid. Detection of substances zones was performed in UV – light, showing ammonia vapors [3].

Establishing a natural of xanthones of *Iris hungarica* leaves and rhizomes performed by thin layer chromatography using «Silufol» plate in the solvent system BAW (butanol – acetic acid – water) (4: 1: 2). On the plate we applied 70% alcohol extracts of leaves and rhizomes with reliable samples.

Results and discussions: as a result of the first experiment, we found spots with yellow, blue – purple, yellow – green and pale – pink fluorescence that is previously attributed to the flavonoids, xanthones, coumarin, isoflavones, chlorophylls. In the second experiment after passing chromatogram substances zone viewed in visible and UV light and identified such groups of substances as isoflavones (daidzein **1**, **2** genistein, formononetin **3**), flavonoids (quercetin) [1]. As a result of the third experiment, we identified hydroxycinnamic acids (**4** hydroxycinnamic, **5** cinnamic, **6** chlorogenic, **7** ferulic) and fenolic (gallic) acid. Chromatogram with extracts of leaves and rhizomes and reliable samples of xantones after treatment with 1% alcohol solution of aluminum chloride formed a bright yellow – green fluorescent complexes. Were established the presence in the leaves and rhizomes of *Iris hungarica* derivatives of dibenzo – γ – pyrone – mangiferin **8** and izomangiferin **9** (table 1).

Table 1. Biological active substances of *Iris hungarica*.

		
Isoflavonoids **1**: R_1=R_3=OH; R_2=H **2**: R_1=R_2=R_3=OH **3**: R_1=OH; R_2=H; R_3=OCH_3	Hydroxycinnamic acids **4**: R_1=R_2= R_4=H; R_3=OH **5**: R_1=R_2=R_3= R_4 = H **6**: R_2=R_3=OH; R_4= $C_7H_{12}O_6$ **7**: R_3=OH; R_1= OCH_3; R_4 = H	Xanthones **8**: R_1=H; R_2= C-β-D-Glc **9**: R_1= C-β-D-Glc; R_2 = H

Conclusion: in the leaves of *Iris hungarica* we identified flavonoids and isoflavonoids (quercetin, formononetin, daidzein); hydroxycinnamic acids (cinnamic, hydroxycinnamic, ferulic, chlorogenic), also xanthones – mangiferin, izomangiferin.

In the rhizome of Iris hungarica we established the presence of isoflavones (daidzein, genistein, formononetin); hydroxycinnamic (cinnamon, hydroxycinnamic, chlorogenic) and phenolic acids (gallic), xanthones mangiferin, izomangiferin.

As a result of the work it can be concluded that the chemical composition of *Iris hungarica* is very diverse, which gives the prerequisites for further study in order to isolate individual substances.

Literature

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