

Aim. The aim of this study is determination of the qualitative and quantitative composition of organic acids of the rhizomes of *Iris graminea* L. by gas chromatography-mass spectrometry (GC/MS) method.

Materials and methods. The subject was the rhizomes with roots of *Iris graminea* prepared in April, 2017 in the State Dendrological Park "Alexandria" of Ukrainian National Academy of Sciences (Belaja Tserkov, Kyiv region, Ukraine). Raw materials dried to air-dry state, was used for chemical analysis of an average sample raw crushed to a particle size of 2 – 3 mm.

For the chromatographic analysis the BAS of rhizomes extracted with 70% ethanol (1:20) with heating on a water bath at 50°C for 30 min. Organic acids were determined by one-dimensional paper chromatography «Filtrak № 4» in a solvent system of *n*-propanol – 25% ammonia solution (6:4). Chromatograms were treated with a solution of sodium 2,6-dihlorfenolindofenolyata, organic acids appeared as pink spots on a blue background in visible light. The component composition of organic acids of rhizomes of *Iris graminea* was investigated by the method of chromatography-mass-spectrometry on the 5973N/6890N MSD/DS Agilent Technologies (USA). Methyl esters of organic acids prepared according by a modified method (Carrapiso A.I, García C. Lipids. 2000. Vol.35, N11. P.1167-1177). For component identification data from the mass-spectra libraries NIST05 and WILEY 2007 with total number of spectra of more than 470,000 were used combined with identification programs AMDIS and NIST.

Results and discussion. In comparison with the standard compounds and of R_f value the oxalic (R_f 0.35), malic (R_f 0.39), ascorbic (R_f 0.67), succinic (0.45), tartaric (0.35) and citric (R_f 0.29) acids were identified in the rhizomes of *Iris graminea* by Paper Chromatography.

The analysis of organic acid composition of the rhizomes of *I. graminea* showed presence of 38 acids and their total content in the dry raw materials was 31551,32 mg/kg. Qualitative composition of the lower carboxylic acids varied there are mono-, di- and tricarboxylic acids by the number of carboxyl groups; aliphatic and aromatic acids by the nature of hydrocarbonic radical connected with a COOH-group; saturated and unsaturated acids by the level of saturation. The lowest acids are presented by both free organic acids, and hydroxyacids.

Monobasic saturated acids are contained in the amount of 13.99%, dibasic saturated – 28.23%. Hydroxyacids are contained in a large amount - 43.66%, dominated by citric acid (28.25%). Phenolic acids account for 6.07% of the total amount of carboxylic acids. Among the aliphatic acids in the dominant apple (13.41%), levulin (7.92%), oxalic (6.73%) acids. Unsaturated fatty acids are 11.33%, the largest quantities are linoleic (6.01%), linoleic (3.04%) acids, and gondoic acid has also been identified.

Citric acid (28.25%) is prevalent among the saturated aliphatic acids; it shows metabolic activities in the metabolism of carbohydrates and amino acids and maintaining acid-base balance in the body.

Conclusions. *Iris graminea* rhizomes were investigated by gas chromatography. 38 organic acids were established and their quantitative value were determined. It was found that iris rhizomes contain 31551,32 mg/kg. The results of this study are significant for determining beneficial compounds in iris rhizomes, so making use of these plant raw material as source of new medicines in the future is possible.

PHYTOCHEMICAL ANALYSIS OF THE LEAVES AND ROOT CROPS OF PASTINACA SATIVA

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Introduction. Parsnip (*Pastinaca sativa* L., celery (umbellifer) family – *Apiaceae* (*Umbelliferae*)) is widely cultivated as a vegetable and medicinal plant in Ukraine and European countries. In scientific medicine, preparations are used on the basis of biologically active substances of the fruits of parsnips. The combination of furocoumarins of parenteral has the ability to expand peripheral vessels and coronary vessels of the heart, to eliminate bronchospasms and spasms of smooth muscles of the abdominal cavity, exhibits a moderate sedative effect, also applies to angina pectoris, cardioneurosis with spasm of the vessels, gastrointestinal cramps, biliary tract, kidney and urinary tract. A mixture of two furocoumarins –

bergapten and xanthotoxin has photosensitizing properties, stimulates hair growth, and is used to treat psoriasis, vitiligo, nesting swollenness. Therefore, due to the chemical composition and raw material base, phytochemical study of parsnip is relevant.

Aim. The purpose of our study was phytochemical study of root crops and leaves of parsnip.

Materials and methods. Identification of biologically active substances in the investigated raw material was carried out using qualitative reactions, paper and thin-layer chromatography. The sum of oxidizable polyphenols was determined by the permanganate-metric method in the Leventhal modification, using as a titrant 0,02 M potassium permanganate solution. A quantitative determination of the free organic acids total content was carried out using alkalimetric titration, using as a titrant 0,1 M solution of sodium hydroxide. The content of the sum of hydroxycinnamic and amino acids was determined using a spectrophotometric method. Quantitative analysis of the sum of water soluble polysaccharides in root crops and leaves of parsnip sowing was carried out gravimetrically.

Results and discussion. As a result of the experiment, polysaccharides, organic, hydroxycinnamic, and amino acids, flavonoids, tannins were found in root crops and leaves of parsnip sowing. Quantitative analysis of the content of certain groups of biologically active substances in the raw material of parsnip seedlings showed that the content of the sum of oxidizable polyphenols in terms of tannin in root crops was 0,08%, in the leaves – 1,55%. The total free organic acids content in terms of mallic acid in the root crops of parsnip sowing was 1,65%, in the leaves – 1,63%; hydroxycinnamic acids in terms of chlorogenic acid – 0,26% and 1,66%; amino acids in terms of leucine is 1,08% and 2,46% respectively. The quantitative content of the sum of water-soluble polysaccharides in the root crops of parsnip sowing was 9,84%, in the leaves – 16,40%.

Conclusions. The results of the phytochemical study of the investigated raw material showed significant content of water-soluble polysaccharides and amino acids. The experimental data obtained will be used later in developing the relevant sections of the quality control methods for root crop and leaves parsnip.

SOURCES OF PHYTONUTRIENTS AND THEIR INFLUENCE ARE ON THE ORGANISM OF MAN

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Introduction. At least, the one-third of all cases of disease crawfish is preventive. Most benefit for an organism, as a preventive, bring those elements and biologically active substances that come in the organism of man in natural way, namely with foodstuffs.

Aim. To Investigate and analyze the substances of vegetables that find out an antitumoral action.

Materials and methods. Review of literature of scientific reference book, descriptive, searching, logical methods.

Results and discussion. In plants there are very useful substances that is named phytonutrients. If to consume phytonutrients every day, it is possible to get rid from such problems, as a high level of cholesterol, heart trouble, senilism, including formation of malignant tumours. Phytonutrients are natural medications, what safe and popular.

To the substances of natural origin allyl sulfides (foods with a pungent odor, for example bow, garlic) belong with an antitumoral action; ketoles and isotiocyanates (cabbage of broccoli, cabbage white-haired, cauliflower, sheet mustard); isoflavones (bobs, lentil, soy); saponins (potato, soy, spinach, tomatoes), carotenoids (carrot, cabbage of broccoli, cauliflower, green leaf vegetableness, tomatoes), flavonoids (a cabbage is white-haired, bow).

Exactly phytonutrients give the bright colouring to the vegetables. To carotenoids and flavonoids belong, so-called, pigments that determine the color of vegetables.

Presently about 2 thousand pigments are known in the vegetable world, among what approximately 150 is most proof. All pigments distribute on three groups: chlorophyll, carotenoids and anthocyanins.