

A STUDY OF ORGANIC ACIDS OBTAINED FROM DAHLIA NYMPHAEALES TUBERS OF THE KEN'S FLAME VARIETY

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According to available references, the study of chemical composition of tubers a Dahlia has not received much attention. In the subterranean organs of some species of Dahlia cultivar we find such groups of bioactive substances as polysaccharides, vitamins, tannic substances, amino acids and mineral substances. For the present study we have chosen Ken's Flame cultivar of the Nymphaeales class. The cultivar is one of the popular in Ukraine, known to be a good source of raw substances.

Organic acids are a group of bioactive substances with manifold pharmacological impact on a human organism. As part of the study of the chemical composition of tubers of Dahlias Nymphaeales of Ken's Flame cultivar, the aim of our study was to examine the qualitative and quantitative composition of organic acids.

Preliminary study of the qualitative composition of organic acids was made by paper chromatography using the solvent system: I - butanol-water-formic acid (5:0,5:2), II - n-propanol-concentrated ammonia (6:4), standards of organic acids. The chromatograms were processed using 2% bromocresol green (yellow spots on a green background) and 0.04 % bromocresol blue (yellow spots on a dark blue background). The quantitative content of substances was defined by chromatography-mass spectrometry applied on a Agilent Technologies 6890. As a result of preliminary studying of organic acids on chromatograms 4 spots are revealed, with 2 spots by values of Rf standards of exemplars are identified as malic acid (I system – Rf 0,55; II system – Rf 0,29) and citric acid (I system – Rf 0,55; II system – Rf 0,29). Malic acid is used in laxatives. Citric acid is used in the treatment of urolithiasis, is an antioxidant and a part of the Krebs's cycle.

As a result of gas chromatography-mass spectrometric studies 9 organic acids were revealed for the first time in the tubers of Dahlias Nymphaeales of Ken's Flame cultivar, among which the largest quantities of malic (2579.5 mcg/g) and citric (3771.8 mcg/g) acids. Among the revealed organic acids were oxalic acid (318.6 mcg/g), succinic acid (267.0 mcg/g) and malonic acid (525.1 mcg/g), which fall into saturated dibasic acids. This group of acids has a stimulating action on the nervous system, anti-inflammatory action, used for the treatment of diseases of the cardiovascular system, in cosmetology. Unsaturated dibasic acids were represented by fumaric acid (99.7 mcg/g). It is used to treat autoimmune diseases, in particular psoriasis. Of phenolcarboxylic acids found in tubers of dahlia were vanillic (60.1 mcg/g) and 4-oxy-dihydrocinnamic (1016.2 mcg/g) acids. Aromatic acids were represented by benzoic acid (33.9 mcg/g).

Thus, the results of a study into qualitative and quantitative composition of the organic acid content in tubers of Dahlia Nymphaeales of Ken's Flame cultivar prove the efficiency of this kind of raw material for the development of new dosage forms with a specific pharmacological effect.