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ABSTRACT BOOK

DETERMINATION OF CARBOXYLIC ACIDS IN THE FRUITS OF *ACTINIDIA* Lindl. BY TLC AND HPLC METHOD

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The qualitative composition and quantitative content of aliphatic and aromatic carboxylic acids in the fruits of *Actinidia* Lindl has been studied. The ripe fruits of *A. chinensis* and *A. arguta* were selected. Fruits were collected in early September at the research areas of the M.M. Grishko National Botanical Garden of National Academy of Sciences of Ukraine in 2019.

The study of the qualitative composition and quantitative content of aliphatic and aromatic acids was performed by TLC and HPLC methods. TLC studies were performed in a solvent system of *n*-butanol-formic acid-water (10:1:2), ethyl acetate-formic acid-water (3:1:1), *n*-butanol-formic acid-water (75:15:10) and *n*-butanol – formic acid – water (4:1:5) compared to standard samples. The chromatograms were treated with 0.05% alcohol solution of bromothymol blue and 0.1% alcohol solution of sodium 2,6-dichlorophenolindophenolate.

HPLC studies were performed on a liquid chromatograph Agilent Technologies 1200. Separation was performed on a chromatographic column Zorbax SB-Aq (4.6 mm, 150 mm, 3.5 μm) (Agilent Technologies, USA). Detection was performed using a diode-matrix detector [1,2]. An aqueous solution of phosphoric acid was used to extract aliphatic carboxylic acids. Elution was performed in isocratic mode. The acetonitrile (A) and the 0.1% solution of phosphoric acid in water (B) (1:99) were used as the mobile phase [1]. Aromatic acids were extracted by methanol. The methanol (A) and the 0.1% formic acid solution in water (B) were used as the mobile phase. Elution was performed in a gradient mode: 0 min - A (25%): B (75%); 25 min - A (75%): B (25%); 27 min - A (100%): B (0%); 35 min - A (100%): B (0%) [2]. The identification and quantitative analysis were performed using standard solutions of carboxylic acids.

The presence and quantitative content of isocitric, tartaric, malic, fumaric, ascorbic acid in the fruits of *A. chinensis* has been found. An isocitric acid predominates ($1.39 \cdot 10^4$ μg/g). The tartaric, malic, ascorbic and fumaric acids have been identified in *A. arguta* fruits. A tartaric acid predominates ($1.69 \cdot 10^3$ μg/g). The sum of content of aliphatic carboxylic acids is dominated in the fruits of *A. chinensis* ($1.75 \cdot 10^4$ μg/g) compared to *A. arguta* ($2.3 \cdot 10^3$ μg/g). It confirms the taste of the fruits.

The research of aromatic carboxylic acids in the fruits of selected species of *Actinidia* revealed the presence of 5 compounds. The caffeic, syringic, *p*-coumaric, sinapic, *trans*-cinnamic acids have been identified in *A. chinensis* fruits. In the fruits of *A. arguta*. - gallic, *trans*-ferulic, sinapic, *trans*-cinnamic, salicylic acids. A quinic acid was found in both studied raw materials: *A. chinensis* - $6.55 \cdot 10^2$ μg/g, *A. arguta* - $5.06 \cdot 10^2$ μg/g.

Literature:

- [1] C. Agius, S. von Tucher, B. D. C. Poppenberger, W. Rozhon. *MethodsX*. **2018**, 5, 537-550.
[2] B. R. Sumere. *Ultrasonics sonochemistry*. **2018**, 48, 151-162.