64. Zjazd Naukowy PTChem

Lublin 2022

KSIĄŻKA ABSTRAKTÓW

Książka abstraktów została przygotowana na podstawie materiałów nadesłanych przez Uczestników 64 Zjazdu PTChem.

Organizatorzy nie ponoszą odpowiedzialności za ich treść

Skład: Wojciech Stefaniak

Wydawca:

Polskie Towarzystwo Chemiczne
ul. Freta 16
00-227 Warszawa

ISBN 978-83-60988-35-0

S02 P34

IDENTIFICATION OF RUTIN AND CHLOROGENIC ACID IN THE LEAVES OF *ACTINIDIA ARGUTA* LINDL. BY HISTOCHEMICAL REACTIONS AND HPTLC

Nadiia Kovalska[1], Uliana Karpiuk[1], Izabela Jasicka-Misiak[2], Halyna Kukhtenko[3]

[1]*Bogomolets National Medical University, Kyiv, Ukraine*
[2]*Opole University, Opole, Poland*
[3]*National University of Pharmacy, Kharkiv, Ukraine*

The fruits of kiwiberry *(Actinidia arguta* Lindl.) are a valuable dietary product. Actinidia leaves are a promising source of phenolic compounds [1]. The aim of the work was the development of a microscopic and a high-performance thin layer chromatography (HPTLC) fingerprint methods [2] for the qualitative determination of flavonoids and hydroxycinnamic acids in *Actinidia arguta* leaves. Histochemical reactions on cross sections of petiole and central vein of the leaf with 3% solution of aluminum (III) chloride and nitrite-molybdenum reagent showed character of the localization of flavonoids and hydroxycinnamic acids in *Actinidia arguta* leaves.

Leaves from 18 varieties of *Actinidia arguta* were harvested in August 2021 at the M.M. Gryshko National Botanical Garden (Kyiv, Ukraine). Dried leaves were extracted with methanol using hot extraction with reflux. The HPTLC analyses were carried out on a CAMAG analytical system (Muttenz, Switzerland). Automatic HPTLC application device (Linomat 5, CAMAG) was used to apply extracts and standard solutions to HPTLC plates. Chromatographic separation was performed on 20cm×10cm HPTLC plates through vertical glass chamber. Mobile phases were: (A) chloroform:ethyl acetate:formic acid (5:4:1) and (A) formic acid:water:ethylmethylketon:ethyl acetate (10:10:30:50). Identification of polyphenols in the investigated leaves was performed by comparison of a color and Rf of the chromatographic zones with reference standards rutin and chlorogenic acid before and after derivatization. Rutin after derivatization with a 3% solution of aluminum (III) chloride acquires a bright yellow fluorescence at 366 nm. After derivatization with Folin's reagent, chlorogenic acid and rutin become dark blue at visible light. It was established that rutin (Rf 0,45) and chlorogenic acid (Rf 0,7) are better separated in the mobile phase B. The chromatographic images (Fig. 1) were obtained using the TLC scanner of CAMAG analytical system.

Conclusion: Histochemical reactions in fresh leaves can be used to identify plants, which are potential sources of phenolic compounds. Results of the chromatographic fingerprints will be used for the development of the identification method of medicinal plant material in the Monograph project "*Actinidia arguta leaves*" to the State Pharmacopoeia of Ukraine (Identification C).

References:

[21] D. Almeida, D. Pintoa, J. Santosa, et al., *Surface and Colloid Science*, *Food Chemistry*, 259 (2018), 113-121

[22] N. Stanek, P. Kafarski, I. Jasicka-Misiak, *Journal of Chromatography A*, 1598 (2019), 209-212

Captions:

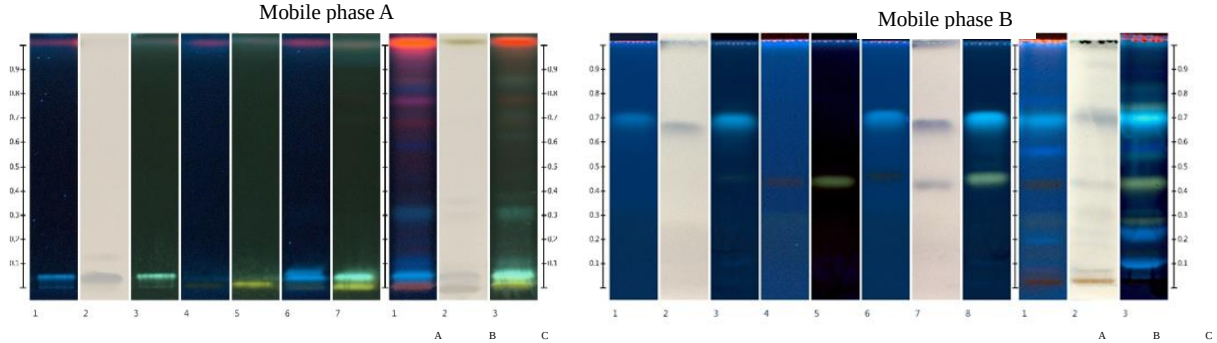

Fig. 1. HPTLC fingerprints of *Actinidia arguta* leaves and polyphenol standards in mobile phase A and B: 1, 2, 3 – chlorogenic acid; 4, 5 – rutin; 6, 7, 8 – a mixture of rutin and chlorogenic acid; A, B, C – extract of *Actinidia arguta* `*Kyivska krupnoplidna*` leaves.