СУЧАСНІ ДОСЯГНЕННЯ ФАРМАЦЕВТИЧНОЇ НАУКИ В СТВОРЕННІ ТА СТАНДАРТИЗАЦІЇ ЛІКАРСЬКИХ ЗАСОБІВ І ДІЄТИЧНИХ ДОБАВОК, ЩО МІСТЯТЬ КОМПОНЕНТИ ПРИРОДНОГО ПОХОДЖЕННЯ

Матеріали VII Міжнародної науково-практичної інтернет-конференції

11 КВІТНЯ 2025
м. Харків

Aim: This research aims to optimize phenolic compound extraction from ornamental apples.

Methods: 0.25 g lyophilized powder of ornamental apple leaf samples (mixture of 32 cultivars) were weighed (exact weight) and extracted with ethanol using ultrasonic bath. Extraction conditions were optimized using "Design-Expert® 6.0.8" software ("Stat-Ease Inc.", Minneapolis, Minnesota, USA). A three-level-three-factor central composite design using the response surface methodology was employed. The variables optimized were ethanol concentration, extraction time and ultrasonic power, aiming to maximize the yield of phenolic compounds. Total phenolic content was measured by the Folin–Ciocâlteu assay and expressed as mg GAE/g, recalculated for dry weight.

Results: Statistical analysis using ANOVA confirmed that the quadratic polynomial model is significant (p=0.0387). The desirability value of the model was 0.979 which confirmed that the selected model is suitable for extraction of phenolic compounds. The lack of fit p value (0.1922) was not significant, also confirming the model's appropriateness. An adequate precision was 6.27 indicating adequate model discrimination. The predicted total phenolic content was 33.35 mg GAE/g.

Through mathematical statistical modeling of the extraction optimization of phenolic compounds, the optimized extraction conditions were 70% (v/v) ethanol, extraction time – 60 min., and ultrasonic power – 904 W. These extraction conditions could be suitable for further research on the phenolic compounds of ornamental apple leaf samples.

PHARMACOGNOSTIC STUDY FLAVONOIDS OF *PLATANUS ORIENTALIS*

El Moussi Hajar, Protska V. V.
National University of Pharmacy, Kharkiv, Ukraine

Introduction. The genus *Platanus* L. includes around 10 species and is the only genus within the family *Platanaceae* T. Lestib [1]. From the leaves of *Platanus orientalis* L., kaempferol and quercetin glycosides were extracted. In the essential oil of *Platanus orientalis* L. leaves, analyzed using gas chromatography-mass spectrometry, trans-geranylacetone and β-ionone were identified. Fallen leaves of *Platanus orientalis* L. are rich in α-tocopherol and its esters with fatty acids. In the buds of *Platanus orientalis* L., allantoin, platanoside, and tiliroside have been detected. The bark of *Platanus orientalis* L. stems contains proanthocyanidins. Additionally, the bark contains triterpenoids and steroids: betulinic acid, betulinaldehyde, betulonic acid, betulin, platanic acid, daucosterol, sitosterol, and stigmasterol. The fruits of *Platanus orientalis* L. accumulate tiliroside, platanoside A, β-sitosterol stearate, stearic acid, noricaritin-7-glucoside, and 12-tricosanol. In the sprouts of *Platanus orientalis* L., flavonoids, chalcones, coumarins, and terpenoids have been identified [1]. *Platanus orientalis* L. has been traditionally used as a medicinal plant. Folk medicine recommends decoctions of the bark and leaves to strengthen gums, while powdered leaves are used for local treatment of wounds, ulcers, and burns. In traditional medicine among various peoples, the leaves of

Platanus orientalis L. were used as anti-inflammatory, hemostatic, astringent, analgesic, antidiarrheal, wound-healing agents, as well as a urinary antiseptic [1].

Considering its widespread presence and insufficiently studied chemical composition, *Platanus orientalis* L. is a promising plant for phytochemical studies and the development of herbal medicinal products.

Materials and methods. The objects of the study were the leaves of *Platanus orientalis* L., harvested in 2024 in the Kharkiv region. The qualitative composition of flavonoids in the leaves of *Platanus orientalis* L. was studied using TLC in a mobile phase of anhydrous formic acid-water-ethyl acetate (6:9:90). The identification of flavonoids was carried out based on their characteristic fluorescence under UV light after treating the chromatogram with ammonia vapors. The quantitative content of flavonoids was determined spectrophotometrically at a wavelength of 410 nm, recalculated as rutin and absolutely dry raw material.

Results and discussion. Based on chromatographic studies of flavonoids compared to standard samples, hyperoside, rutin, luteolin, and apigenin were identified in the leaves of *Platanus orientalis* L. The flavonoid content in the leaves of *Platanus orientalis* L. amounted to 2.19%.

References:

1. Evaluation of the clinical efficacy and safety of Platanus orientalis L. distillate in the treatment of patients with allergic rhinitis / Z. Kanannejad, N. Ebrahimi, M. Mahboubifar, N. Sepahi et al. *Journal of Herbal Medicine*. 2023. Vol. 41. P. 100738

BIOLOGICAL ACTIVITIES OF MEDICINAL MUSHROOM MYCELIUM PREPARATIONS *IN VITRO*

Garmanchuk L.[1], Vedenicheva N.[2], Stupak I.[1], Starshinova M.[1], Ostapchenko L.[1]

[1]ESC "Institute of Biology and Medicine", Taras Shevchenko National University of Kyiv, Ukraine

[2]M.G. Kholodny Institute of Botany of the National Academy of Sciences of Ukraine, Kyiv, Ukraine

Introduction. Medicinal mushrooms exhibit a significant number of therapeutic effects due to the content of a wide range of biologically active substances. Among them are triterpenoids, polysaccharides, chitin, and others, but the full composition of active ingredient has not been definitively established. Recently, phytohormones of the cytokinin class synthesized by medicinal mushrooms have attracted attention. Cytokinins act as a negative regulator of the cell cycle and cell growth of a significant number of animal and human tumor cells *in vitro* [1]. Comparison of information on the medicinal properties of mushrooms and data on the biological effects of cytokinins on animal and human cells suggests that cytokinins may belong to the complex of compounds that provide the therapeutic effects of mushrooms. Our previous studies demonstrated that the antitumor effects of cytokinins were manifested both by inhibition of cell survival and by an increase in the apoptotic index [3]. It is known that cell apoptosis and necrosis can be directly associated with an increase in lactate dehydrogenase (LDH) activity, which is an