

international conference

ABSTRACT BOOK



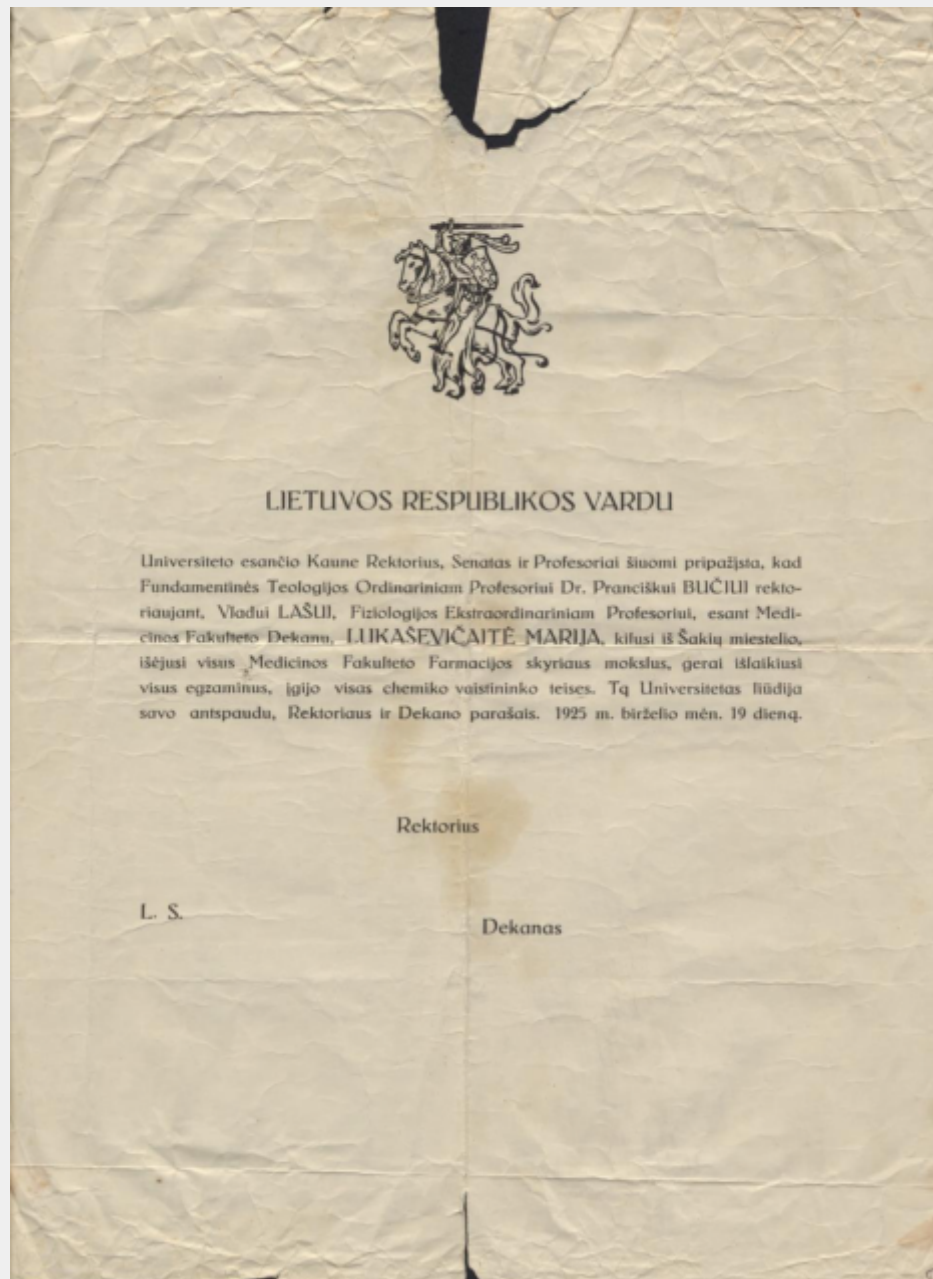
CONTEMPORARY PHARMACY: ISSUES, CHALLENGES AND EXPECTATIONS 2025

April 10
Lithuania, Kaunas

Conference dedicated to the Centennial of the First Lithuanian Pharmacy Diploma.

One hundred years ago, the first nine graduates of the University of Lithuania completed their higher pharmacy studies and were awarded the diploma of Chemist-Pharmacist. Over the past 100 years, approximately 5,600 individuals have completed higher pharmacy studies in Kaunas. These graduates are not only the creators of Lithuanian pharmacy history but also contributors to the broader history of our country.

As we mark this centennial milestone, it is a fitting moment to look back and reflect on the remarkable journey we have taken...



HPTLC Standardisation of *Epilobium angustifolium* Polyphenols Dry Extracts

K. Uminska¹, L. Ivanauskas², V. Georgiyants³, M. Korinek^{4,5}, O. Mykhailenko^{3,6,7*}

¹ Zhytomyr Basic Pharmaceutical Professional College, Zhytomyr, Ukraine; ² Department of Analytical and Toxicological Chemistry, Lithuanian University of Health Sciences, Kaunas, Lithuania; ³ Department of Pharmaceutical Chemistry, National University of Pharmacy, Kharkiv, Ukraine; ⁴ Graduate Institute of Natural Products, College of Pharmacy, Kaohsiung Medical University, Kaohsiung 80708, Taiwan; ⁵ Graduate Institute of Natural Products, College of Medicine, Chang Gung University, Taoyuan 33302, Taiwan; ⁶ Pharmacognosy and Phytotherapy Group, UCL School of Pharmacy, London, United Kingdom; ⁷ Department of Pharmaceutical Biology, Kiel University, Kiel, Germany

* Corresponding author's e-mail: o.mykhailenko@ucl.ac.uk

Background. The standardisation of plant extracts is a critical step in ensuring the quality, efficacy, and safety of herbal preparations. Variability in plant composition due to environmental, genetic, and processing factors can significantly impact the bioactive profile of the final product (1). *Epilobium angustifolium* (2) is rich in polyphenols with anti-inflammatory and antimicrobial properties, holds great therapeutic potential. However, the lack of standardised extraction and analytical methods limits its use in phytopharmaceuticals.

Aim: to develop a reliable HPTLC method for *E. angustifolium* dry extract standardisation, ensuring consistency and potency for future applications.

Materials and methods: polyphenolics were studied using ethanol (70 v/v) and water *E. angustifolium* leaves dry extracts and chlorogenic acid, avicularin, guajaverin, isoquercitrin and hyperoside, gallic acid as reference standards. The analysis was carried out in HPTLC plates Si 60 F₂₅₄ (Merck) in ethyl acetate: formic acid: water (68:8:8) as mobile phase with further derivatisation by 2-aminoethyl-diphenylborinate 1% solution and 5% macrogol 400.

Results. The HPTLC analysis showed all compounds in *E. angustifolium* extracts but in different concentrations, e.g., yellow fluorescent zones ($R_f=0.4$; $R_f=0.38$; $R_f=0.85$; $R_f=0.52$) were in line with isoquercitrin, hyperoside, avicularin and guajaverin, and these compounds were dominant in both extracts, but their concentrations were higher in the ethanol dry extract. The light blue, fluorescent zone ($R_f=0.7$) was identified as gallic acid (Fig. 1).

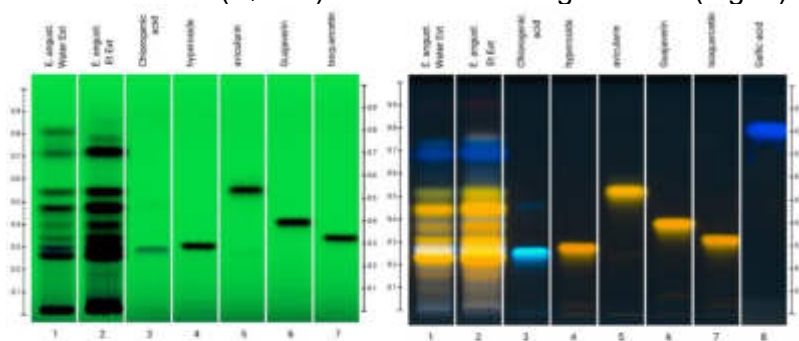


Fig. 1. HPTLC profile of *E. angustifolium* dry extracts under UV 254 nm (A) prior to derivatization and at UV 366 nm after derivatization

Conclusions. The presented method can be used for standardisation of *Epilobium* species.

References

1. Zhan X., Chen Z., Chen R., Shen C. Environmental and genetic factors involved in plant protection-associated secondary metabolite biosynthesis pathways. *Front Plant Sci.* 2022;13:877304-18.
2. Ivanauskas L., Uminska K., Gudžinskas Z., Heinrich M., Georgiyants V., Kozurak A., Mykhailenko O. Phenological variations in the content of polyphenols and triterpenoids in *Epilobium angustifolium* herb originating from Ukraine. *Plants* 2024; 13(1):120-142.