EVALUATION OF THEANTIOXIDANT CAPACITY OF ASTRAGALUS GLYCYPHYLLOS EXTRACTS OBTAINED BYINNOVATIVEEXTRACTION METHODS

Jovita Jovaišaitė[1], Laura Jūrienė[1], Petras Rimantas Venskutonis[1]

[1]Kaunas University of Technology
jovita.jovaisaite@ktu.lt

Astragalus glycyphyllos, a perennial herbaceous plant of the Fabaceae family, is native to Europe and Asia. With its unique legume shape, itś colloquially referred to as ëagleś clawsïn Bulgaria. Widely used in traditional medicine across Europe and Asia, A. glycyphyllos has been employed for various ailments, including urinary and gastrointestinal disorders, dermatitis, rheumatism, and hypertension.The aim of this work is to use different innovative extraction methods to isolate bioactive compounds from Astragalus glycyphyllos plants collected at different growth periods and to evaluate the antioxidant capacity of the obtained extracts. Astragalus glycyphyllos were primarily defatted by supercritical fluid extraction with carbon dioxide (SFE-CO2). The defatted leaves were further extracted by two innovative methods: pressurised liquid extraction (PLE) and ultrasonic extraction using three solvents of different polarity. PLE applies high pressure and temperature to increase extraction efficiency, while ultrasonic extraction uses sound waves to disrupt plant cell walls and facilitate the release of compounds. The extracts obtained were evaluated using different antioxidant capacity tests: the 2,2-diphenyl-1-picrylhydrazyl free radical (DPPH°) assay and the oxygen radical absorbance capacity (ORAC) assay, and the total phenolics were determined by the Folin-Ciocalteu method.The yields of the lipophilic fractions obtained by SFE-CO2 ranged from 0,9 to 1,4 % depending on the growth period. The results showed that the yields of the extracts extracted from Astragalus glycyphyllos plants by PLE and sonication increased with increasing solvent polarity and there were no significant differences between the different growth periods. The extracts obtained also showed good antioxidant activity.It can be concluded that the use of innovative extraction methods can effectively extract valuable bioactive compounds from the leaves of Astragalus glycyphyllos species. These methods may also be promising for further fractionation of botanical plants.