Course title: Phytochemical analysis – regular course

Number of contact hours: 15 hours (15h lectures)

ETCS credits: 1

Course description: The lecture reviews phytochemical extraction procedures as well as sample preparation and analytical methods for various types of plant matrices containing different phytochemical groups for effective isolation and determination of secondary metabolites by classical and modern analytical techniques. Introduction to phytochemistry and classification of phytochemicals with their different biochemical and bioactive properties will be presented. Within the course, the chromatographic and electromigration methods, hyphenated techniques (LC-MS, GC-MS, CZE-MS) as well as identification methods (mass spectrometry, nuclear magnetic resonance, molecular spectroscopy), instrumental chemical analysis and antioxidant activity measurements will be discussed.

Education effects (P7S_UW, P7S_WG)**:**

- **knowledge**: student knows the most important sample preparation methods for plant matrices containing different phytochemical groups and methods of their determination and measurement of antioxidant activity; knows the main phytochemical types of compounds, basic hyphenated techniques and identification methods.

- **skills**: student is able to select methods for determination of various phytochemicals and for antioxidant activity measurements as well as to interpret obtained results of the measurements

- **social**: student understands the economical aspects of the use of the described analytical methods

Literature:

[1] J. Cazes (ed), Encyclopedia of Chromatography, New York, 2001, Marcel Dekker.
[2] K. Hostettman, A. Morston, Preparative Chromatography: Techniques, Applications, Berlin, 1998, Springer.
[3] O. M. Andersen, K. R. Markham (eds), Flavonoids: Chemistry, Biochemistry and Applications, Boca Raton, London, New York, 2005 CRC Press.
[4] A.J. Harborne, Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis, London, Chapman & Hall, 2013.
[5] F. Shahidi, C.-T. Ho, Antioxidant Measurement and Applications, Michigan, American Chemical Society, 2007.

Assessment method: Final test

Prerequisites: Basic knowledge in organic and analytical chemistry

Primary target group: All specialties students

Lecturer: dr hab. inż. S. Wybraniec, Contact person: dr hab. inż. S. Wybraniec

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