

Level: PhD				
Course title: Metabolism and pharmacological activities of essential oils, DSB610				
Status: elective				
ECTS: 15				
Requirements: none				
Learning objectives The aim of this course is to: (1) provide knowledge about the chemical structure, biochemical methods of synthesis and degradation of the volatile compounds in plants, (2) introduce students to the ecological roles of essential oils and interactions with abiotic and biotic factors, (3) familiarize students with the importance of essential oils in modern phytotherapy and alternative medicine techniques, (4) introduce students to the latest scientific literature in the field of essential oils research.				
Learning outcomes After successful completion of the course the student is able to: (1) explain the importance of essential oils in adaptive mechanisms of plants, (2) explain the connection between the biological and pharmacological effects of essential oils with the chemical structure of their individual constituents, (3) critically assess the validity of application of some aromatic drug medications, (4) critically analyse scientific papers in the field of essential oils research, (5) independently set up and conduct experiments for determination of chemical composition and biological activities of essential oils, to process and report the obtained results.				
Syllabus <i>Theoretical instruction</i> General pathways of terpenes biosynthesis. Biogenetic isoprene rule. Mevalonic acid biosynthesis. Biosynthesis of mono- and sesquiterpenes. Acyclic precursors in the biosynthesis of monoterpenes. Secondary transformation of mono- and sesquiterpenes. Catabolic fate of monoterpenes. Essential oils: distribution, localization, and chemical composition. Methods for isolation and analysis of essential oils. Physiological, environmental, and pharmacological activities of essential oils. Chemotaxonomic significance. Aromatic drugs and application of essential oils in phytotherapy. Application of GC-MS technique in essential oils analysis. <i>Practise (research project)</i> Independent student's laboratory work in the frame of scientific research project related to the investigation of the quality of essential oils from selected aromatic plants.				
Weekly teaching load				Other: /
Lectures: 5	Exercises: /	Other forms of teaching: /	Student research: 5	