

Doctoral study program: Pharmacology **Specialization:** Experimental and applied pharmacology
Form: doctoral full-time, **Department:** Dept. of Pharmacology, Faculty of Medicine, Masaryk University, **Supervisor:** Jan Juřica, assoc. prof., PharmD., Ph.D.

Ph.D. position: Cannabinoids and the endocannabinoid system in the regulation of cytochrome P450 metabolic activity

Annotation

The variability of CYP enzyme metabolic activity may be due to both genetic polymorphisms and other endogenous or exogenous factors and contributes significantly to the toxicity / therapy failure of some drugs. The role of the endocannabinoid system in regulating CYP metabolic activity has not been described. The hormones and some of cytokines significantly affect the activity of CYP enzymes. By this, it is also known that endocannabinoid system may influence hormone levels and the immune system reactivity. Therefore, we assume involvement of endocannabinoid system on CYP enzymatic system. Synthetic and natural cannabinoids are also gaining prominence among pharmacologists as drugs with promising use in the treatment of pain, obesity, epilepsy or autoimmune diseases. Therefore, from a clinical point of view, it is also desirable to determine the potential for drug interactions at these levels at the level of CYP enzymes. These substances can affect CYP activity either by direct interaction with the enzyme molecule or by modulating the activity of the endocannabinoid system. The primary objective of the work will be to determine the possible interaction potential of test substances from the group of cannabinoids and cannabimimetics (FAAH inhibitors and other indirect agents) at the CYP level, the secondary objective will be to deepen knowledge about the role of the endocannabinoid system in regulating CYP metabolic activity in animal models.

Funding of the research

Currently, the proposed experimental work is not included in any grant project, funding from a specific research project is envisaged. The tutor will apply for a national grant projects the Ministry of Health of the Czech Republic and Grant agency of the Czech Republic.

Information on funding PGS positions

The Institute of Pharmacology is repeatedly successful in the competition for Specific Research projects, of which it is possible to finance the working hours or remuneration of doctoral students in terms of their research activities. The normal amount of work paid from these projects is in the range of 0.1-0.3 FTE.

Requirements for the student according to the Board for the PhD studies Pharmacology at MU
Minimum publishing activity of the student within the Ph.D. study presents one review article in peer-reviewed journal and one original article in a journal with IF over the median of the field, both related to the topic of the dissertation. A condition for successful completion of the study is also an internship abroad of at least 1 month, which is an integral part of the doctoral study. The student will apply for internship funding in the form of ERASMUS programs. As part of their studies, doctoral students also participate in the teaching of the subject Pharmacology in bachelor's and master's degree programs.

Supervisor

The supervisor led 3 students to defend the dissertation, currently he is supervising another PhD student. Author or co-author of more than 80 records on WOS, he also participated in the preparation of several teaching materials (textbook, textbook) by a reviewer of a national textbook of pharmacology, several eLearning materials. h-index = 10, total number of citations more than 450. The supervisor was the PI the grant project of the Ministry of Health of the Czech Republic and participated as a team member in several grant projects provided by the Ministry of Education and Grant agency of the Czech Republic. He is a member of international or national professional societies and 4 branch councils. In case of questions, it is possible to contact the supervisor:

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