

PROJECT OBJECTIVES

One of the main efforts of clinicians nowadays lies in personalized therapy due to its high potential for streamlining clinical medical practice, reducing clinical trial error rates, and reducing healthcare costs. The investigation of clinical conditions and indicators (therapy response predictors) prerequisite to introducing personalized therapy for IBD patients treated with medications (immune suppressive drugs) approved in Slovak and the Czech Republic is a long-term aim of our multidisciplinary research team and mutual collaboration. It also stimulated the elaboration of this project and determined its main goal and specific goals for the two-year project period.

The main goal of this project is thus to monitor the pharmacokinetics of JAKi concerning therapy response/non-response of IBD patients (pilot clinical studies) to be used in clinical practice and for the personalization of the treatment. The specific objective is to develop and validate analytical methods and sample preparation procedures to reliably determine levels of JAKi in complex matrices (biological material samples from IBD patients) to accomplish the main objective.

The objectives in chronologic order are the following:

- 1.1.** To develop the methodology to assess levels of all three JAKi currently approved for the treatment of IBD – tofacitinib, upadacitinib, filgotinib
- 1.2.** To analyse in detail the pharmacokinetics of JAKi using serial measurements of levels of JAKi in serum, urine, and at selected time points also in small and large bowel biopsies
- 1.3.** To analyse the association of levels of JAKi and clinical, biological, ultrasound, and endoscopic response in the following clinical situation
 - 1.3.1.** Beginning of the induction phase of the treatment
 - 1.3.2.** End of the induction phase of the treatment
 - 1.3.3.** The maintenance phase of the treatment

Clinical results will be guaranteed by validated analytical methods and the methods will be validated according to FDA guidelines. Measurable indicators of achievable goals are developed analytical methods and validated protocols published in prestigious open-access journals registered in world scientific databases (WoS, Scopus).