

Recognition of pathogens and tissue damage leads to an inflammatory reaction, which can manifest as redness, swelling, pain and heat. Inflammation is mediated by cytokines, including cytokines from the interleukin-1 (IL-1) family. Importantly, uncontrolled inflammation, which is dependent on the cytokines of the IL-1 family, leads to many diseases (Alzheimer's disease, asbestosis, atherosclerosis, gout, stroke, heart attack, asthma, allergies). Due to their potential harmfulness, the activation of IL-1 family cytokines is tightly controlled. One of the steps in this regulation is their proteolysis to achieve full bioactivity.

This project will investigate whether SLPI (secretory leukocyte protease inhibitor) influences the proteolysis of IL-1 family cytokines and how it affects inflammation. We assume that SLPI, due to its properties of an inhibitor of proteolytic enzymes, reduces inflammation by inhibiting the activation of cytokines from the IL-1 family. In this project, we will use modern research techniques (transgenic animals, a mouse model of inflammation, analysis of cells by flow cytometry and analysis of proteins by biochemical and molecular biology methods), which will allow the verification of the research hypothesis.

The results of the research carried out in this project will increase the knowledge of controlling inflammation and in the future can lead to the development of new strategies for the treatment of inflammatory diseases.