It is presently known that the microorganisms live predominantely in an adhered and complex structure referred to as the biofilm. Microbial cells in the biofilm are encased within an extracellular polymeric matrix (EPS) and possess a lot of features, which make them even 1000 times more tolerant to antimicrobials than their so-called “planktonic” (non-adhered) counterparts. Biofilm may form on the live surfaces like human tissues and, also, on medical devices as catheters, heart valves, and implants. Biofilms cause infections of skin, bones, urinary and biliary tract, lung, endocarditis, vaginosis, and chronic wounds. It is estimated that approximately 24 million patients suffer from chronic wounds annually, of which over 75 % are biofilm-related wounds. The biofilms within chronic wound often respond poorly to antibiotics. Therefore, there is a need to search for new, non-antibiotic methods of their treatment. Essential Oils [EOs] are a promising solution for the problem. EOs are volatile plant metabolites, characterized by potent antimicrobial activity and low toxicity. In our previous studies, we have confirmed the high antibiofilm effectiveness of specific EOs against wound-isolated pathogens. We have also noticed that current techniques of biofilm assessment display certain disadvantages. Therefore, the main aim of the current proposal is to create an *in vitro* model which mimics an infected wound environment and allows to analyze of the impact of EOs against biofilm formed in the above-mentioned conditions. We propose to apply a new- formulated medium which consists of elements presented in wound fluid and natural biocellulose carrier as a surface for the cell growth and adhesion. We hope that our results will contribute to the development of *in vitro* studies related to the analysis of antimicrobials’ (and EOs, specifically) impact on biofilm formed by chronic wound pathogens. We believe that new insight into EOs’ antibiofilm activity will have a great influence on their application as antimicrobials.

The research we want to perform includes treating biofilms of *Pseudomonas aeruginosa* and *Staphylococcus aureus* with EOs and their active components in a new milieu vs. standard laboratory conditions. Using state-of-the-art research devices, such as the electron microscope, confocal microscope, gas chromatography-mass spectrometry, laser diffraction, and plate-based techniques, we intend to analyze the EOs’ features and impact on biofilms. The outcomes of the project will help to better understand the actual impact of EOs against biofilm formed by wound pathogens.