The introduction of antibiotics made it possible to overcome of many bacterial infections. However, the abuse of antibiotics in many areas of life has contributed to the spread of resistance among many species of microorganisms. Some antibiotics have become completely ineffective in the fight against bacteria, and there is a growing lack of therapeutic options that would prevent the development of dangerous infections. An example can be particularly resistant to penicillin, macrolides and fluoroquinolones strains of streptococci that cause pneumonia and pharyngitis. For several years, intensive research has been carried out on the biochemistry of bacterial cells in order to discover a new targets for the treatment of bacterial infections. One possibility is to use compounds which block the effects of serine proteases, which are the enzymes produced by the bacteria. Bacterial serine proteases help break down tissue barriers thus destroying an antibodies and giving the bacteria the ability to survive in adverse conditions.

The aim of the project is to obtain and characterize bacterial serine protease inhibitors, which would be an effective weapon in the fight against pathogenic bacteria, causing many diseases of bacterial etiology. In addition, the object of the project is also to discovery and identify the targets which inhibited may have a significant effect on the antimicrobial activity of many strains of bacteria.

Obtainment of selective and specific compounds blocking bacterial serine proteases is significant progress in the engineering of synthetic organic compounds. Knowledge of how these new compounds affect the bacterial cell may contribute to the understanding of its life processes. The project makes use of both biological and technological sciences to achievement of aims. The methods of synthetic chemistry will be used to work out the results of the biological research.