The aim of this project is to isolate the enolase-like outer membrane proteins from *Salmonella spp.* (membrane enolase), investigation of its properties and explain the mechanism of receptor-protein interactions in the invasiveness and colonization of these pathogens. Antigenic properties of membrane enolase and its participation in the phenomenon of molecular mimicry as the effect of autoimmune diseases will also be explored. Purified, homogeneous cytoplasmic protein will be used to prepare rabbit anti-bacterial enolase antibodies. They are necessary to locate enolase-like protein (membrane enolase) in the membrane fraction of *Salmonella spp.* cells. We will check whether the surface enolase is a receptor for human plasminogen and if formation of such complexes enables bacteria to digest extracellular matrix proteins. This would explain the role of the *Salmonella spp.* enolase in invasive mechanism of this pathogen. The presence of enolase proteins on the cell surface of *Salmonella spp*., could indicate that this bacteria becomes insensitive to the host's immune defence system as a result of the molecular mimicry phenomenon. The antibodies produced against these bacterial enolase antigens could react with human enolase native molecules that are present on the surface of endothelial cells, neutrophils, monocytes and leukocytes. This can cause acute inflammation and lead to the development of autoimmune diseases. Therefore, we will check reactivity of sera from patients with a history of *Salmonella* infections with bacterial enolase.

The phenomenon of autoimmunity as a consequence of bacterial infections, including food poisoning still not been sufficiently studied. This may provide knowledge for further research on new components for construction of subunit vaccines containing outer membrane proteins. It should be examined the role of enolase-like proteins in terms of the possible induction of auto-antibodies, which is important in the aspect of the vaccination safety. Epitopes which are cross-reactive with human enolase are not desirable as components of vaccines. Hence the need to identify and distinguish it from protective epitopes. The use of antigens, which are structural components of the bacterial outer membrane, instead of the use of whole bacterial cells, minimizes the risk of infection and allows to initiate response against specific antigens. Consideration of these issues is important, that despite widespread knowledge of the pathogenesis, transmission routes and ways of prevention of Salmonella infection, it remains a major cause of food poisoning in infants, pre-schoolers and school children, not only for developing countries, where special hospital treatment is often required.

Due to reported in 2002 spread of *Salmonella* Kentucky strains resistant to ciprofloxacin - the main antibiotic commonly used in treatment of infections caused by *Salmonella spp.* - it is necessary to carry out research into alternative treatments for infections caused by *Salmonella spp.*, and the prevention of infections through proper immunoprophylaxis. It should be underline that the emergence of strains resistant to primary antibiotic used to treat infections caused by *Salmonella*, is an additional argument to strengthen research in this area.