ABSTRACT

Gluten sensitive entheropathy – celiac disease is a lifelong, genetically predisposed, immunologically mediated susceptibility to dietary wheat gluten, most frequently demonstrated by small-bowel damage and malabsorption syndrome. Strict adherence to gluten-free diet is the sole rational therapy of the disease.

One of the possible therapeutic strategy for the treating of celiac disease is to utilize the synthetic polymer P(HEMA-co-SS). This polymer is capable specifically bound gliadin in gastrointestinal tract and by this way to neutralize the damaging effect of this alimentary protein on mucosa of small intestine in celiac patients. The *in vitro* study on human PBMC and specimens of small intestinal biopsies of celiac patients in our laboratory demonstrated that putative therapeutic ability of P(HEMA-co-SS) is substantially influenced by degree of proteolytic processing of gliadin and P(HEMA-co-SS) and also by different timing of *per os* administration of both components in organism.

Another putative adjuvant therapy of celiac disease is employing of the beneficial probiotic bacterial strains. Our experiments were based on the findings of Prof. Y Sánz and her group demonstrating the significant differences in the composition of bacterial microflora in patients with active form of celiac disease, patient treated by gluten-free diet and healthy control. In cooperation with this group we tested the effect of selected bacterial strains isolated from celiac patients and potentially probiotic strains on the response of innate immunity cells to gliadin. The *in vitro* experiments demonstrated that the various bacterial strains significantly modified the response of human peripheral blood derived dendritic cells to gliadin, measured by the production of cytokines and in the expression of functional surface molecules and that the degree of influence significantly depended on the bacterial strain applied.