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Probiotics and their structural fragments as a potent immune response modifiers

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Abstract

The last decade has featured an increasing use of probiotics in the prevention and treatment of a dramatic list of acute and chronic diseases, immune deficiencies, as well as infectious lesions of bacterial, viral and fungal etiology.

It has become evident that mechanisms of probiotic activity are based not only on their metabolites, but also include the immune modulating activity of the structural components of the cells themselves, primarily, motifs of cell wall peptidoglycans (PGs), muramyl peptides (MPs), lipoteichoic acid (LPA) and nucleotide containing components or DNA motifs, which act as Microbial Associated Molecular Patterns (MAMPs) and activate the corresponding receptors of innate immunity (PRRs), including TLRs and NLRs.

Previously selected Lactobacteria strains, have been proved to demonstrate high level of immune modulating ability. Probiotic lysates and pure structural cell fragments of the most active strains were tested using *in vitro* and *in vivo* immunologic models. They have shown potent ability to stimulate the macrophages, and also to induce the production of various kinds of cytokines, IFNs, TNF, NK cells.

The results provided convincing proof that immune modulating qualities of the researched structural cell fragments individually differ from strain to strain, but all of the tested components demonstrated high immune balancing activity, anti-tumor and anti-inflammation ability.

Orally administered probiotic lysates demonstrated a broad spectrum of immune modulation, anti-allergy, anti-inflammation, anti-bacterial and anti-viral properties as well as an anti-mutagenic, detoxification and radio protective ability.

The tested probiotic materials demonstrated indisputable advantages for their use as new nutraceutical ingredients with potent immune modulation activity.

Biography

Liubov Sichel has earned a PhD in microbiology from Moscow State University. She has had of 11 years of experience in a Biotechnology Industry in which she focused her activities in Microbial Enzymes, Polysaccharides, Amino Acids, Probiotics and Probiotics Cell Fragments and other Microbial Products for medical use. She was awarded a Gold Medal for her contribution to the development of genetically engineered human interferon. She built first Ukraine biotechnology faculty and was subsequently appointed as the first Dean.

Liubov Sichel has received many awards for several biotechnological products. Her current activities are focused on Probiotic Biotechnology. She has 189 publications (most in Russian), and 35 patents.