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Probiotic lectins as synergistic cascade systems imitating probiotics: Terms, characteristics, and conceptions of action

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Lectins include proteins, peptides, and their complexes recognizing glycoconjugates (GC). Probiotic bacterial lectins (PBL) as non-toxic for human substances are produced by probiotic microorganisms. We firstly isolated PBL from cultural fluids of human lactobacilli and *bifidobacteria*. The **aim** was to evaluate useful potential of PBL for human. **Results**: PBL reveal useful properties in subcytoagglutinating or physiological doses: **a)towards human microbiota**: microbe static, cidic and lytic activities against selected opportunistic pathogens; destructions directed against Gram positive or eukaryotic pathogen biofilms; antipathogen cascade actions; multisynergism with antibiotics; coupled functioning as "Expressing pathogen virulent factor – Increasing PBL anti-pathogen activity"; within system "PBL – Microfungal clinical isolate" as sensor for biotope dysbalance detection; support of probiotic microbiota; **b)as helpers for human systems in**: mosaic simultaneously or not discrimination of mucins, simple antigens, peptidoglycans, and polysaccharides; GC-cofunctioning modulation of macrophages and intercellular interactions; inducing lymphocyte cytokine production; immunocorrection; protection of antibodies from proteolysis by pathogen; directed assembling cell gradients; protection of cell layers and metabolism; decreasing mass of human cell biofilms induced by eukaryotic lectins. **Conclusions:** Results indicate and support the following conceptions: PBL are represented and function as mosaic cascade systems organized in space and time. PBL function as metabolomebiotics through a system of PBL–GC complexes and assemblies revealing new features, switching on or off activities towards metabolome nets. PBL destroy external and internal territories of pathogen to increase availability of pathogen to other antimicrobials. PBL imitate main features of probiotics and possess additional potential for system drug therapy in future.

Biography

Vladimir Lakhtin began his work at Institute of Biophysics of Russian Academy of Sciences (RAS), on study of nucleic acids. He continued his work at Bach Institute of Biochemistry of RAS where he completed his PhD on mammalian DNA. Then he worked at Institute of Food Compounds of RAS where he completed his MD on study of glycoconjugates. He was a head of Lab. of Lectinology in Institute Applied Sciences at Lomonosov Moscow University Scientific Park. At present he works at G.N. Gabrichevsky Research Institute, Dep. Medical Biotechnology. He is a head of Lab. of Biopreparations.

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