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Probiotic Lectin Systems Potential: The Glycoconjugate Binding Strategies

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Innate protection involving lectin systems is of increasing attention of investigators. The human protection using glycoconjugates (GC) recognizing systems is important immune ingredient against infectious and autoimmune diseases. Probiotic lectin systems (PLS) possess multiple directions of actions useful for human. **Aim:** To propose the GC-strategies for evaluation the strain potential to select strain ingredients and construct probiotics. **Materials and methods:** Probiotic bacteria were from collection of G.N.Gabrichevsky Research Institute for Epidemiology and Microbiology. PLS were identified and isolated using isoelectrofocusing in polyacrylamide gel. They were identified on blots using GC-biotin (www.lectinity.com) and streptavidin-peroxidase in the presence chemiluminescent substrate in a real time in *BioChemi System* (UVP). Proteins were localized with SYPRO protein blot stain (Bio-Rad). **Results and discussion:** Different GC-binding PLS (> 27 kD, pI 4-8) were identified and isolated. PLS were localised as mosaics within protein massifs. The use of GC (www.lectinity.com) creates basis for constructing metabiotic and metabolomebiotic therapeutics of system action. The following activities of strain metabolites can be predicted: antipathogenic activities (the use of GC imitating microbial cell surface and wall structures: peptidoglycans, sialylated glycans, glycoantigens, others); prebiotic/ synbiotic actions (GC imitating prebiotic structures: derivatives of L-fucans; modified D-galactoside oligomers, etc.); increasing human protection (GC regulating peritoneal macrophages, complement system lectin components: (phospho) mannans and other polysaccharides, glycoantigens); on-duty support against cancerogenesis (normal cell surface décor panels of GC delivered); on-duty support of immunomodulation (panels of GC as antigens: peptidoglycans, others). PLS effectively imitated antimicrobial activities of bifidobacterial and lactobacillar cell probiotics. **Conclusions:** Results indicate the prospects of PLS as the new important functional metabolite ingredients of probiotics to use for prophylaxis and therapy of infectious and non-infectious diseases. The choice of fine specific (PLS—GC)-type interactions needed can be extended using a broad panel of GC.

Biography:

Vladimir Lakhtin has his expertise in study of glycoproteins, lectins and their complexes, multistrain probiotics, antimicrobials, and innate immunity (complement system, etc.) upon infectious and non-infectious diseases. His functional evaluation models based on glycoconjugate recognition and responses of human biotope microbiocenoses and innate protective systems creates new perspective possibilities in diagnostics and prognostics in the field of medical biotechnology and clinical microbiology.