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LECTIN SYSTEMS POTENTIAL IN MEDICAL BIOTECHNOLOGY, PROPHYLAXIS AND THERAPY: OVERVIEW OF OUR WORKS

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ABSTRACT

Works on our results and conclusions are briefly summarized. The data indicate the deep prospects of the glycoconjugate recognizing and binding proteins (lectins and lectin like proteins) as well as natural and synthetic glycoconjugates in microanalyses (using fluorescence and chemiluminescence techniques) and as alternative synergistic antimicrobials of human protective networks. Concepts proposed allow to prognose, diagnose and prevent negative events in human organism interactome non-immunoglobulin protective networks.

KEYWORDS: Lectins, glycoconjugates, complement system, erythropoietins, probiotic lectins, recognition, assemblies, fluorescence, chemiluminescence, technics, microassays, biotopes, patients, biomarkers, biomarker procedures.

1. INTRODUCTION

Last years further advanced interest to lectins (relative to glycoconjugates[GC]-recognizing proteins and their complexes) was demonstrated. The aim of this work is to summarize own works which are available in English: on lectin systems, lectins of probiotic bacteria, lectin properties of erythropoietins and lectin-like propertiers of C4 systemic components of human complement system.

2. RESULTS AND DISCUSSION

2.1. Main Aspects of Lectins Studied

2.1.1. General consideration of lectins, classifications, terms.[5,23,93]

2.1.2. Lectin systems

- Terms, general description[23,35,38];
- Functional superfamilies[7];
- Specificity to glycoconjugates[1,72];
- Erythropoietin[26,52,89];
- Glycoconjugates-recognizing metabolites of the microorganisms[78,82,88];
- Probiotic lectins[1,7,11,20,46,50];
- Postbiotics[61,64,74,77];
- Complement system, C4A+C4B[3,81];
- Synergism[32,47];

-- Synergism of the probiotic strains and their consortium[68];

-- Between lectins[14,19];

-- Between lectins and antibiotics[12];

- Non-immunoglobulin protection supersystem.[53,76,84]

2.1.3. Biological properties of lectins

- Probiotic lectins[1,2,31,38,40,43,44,95];
- Cytokines, cytokine inducers, immunomodulators[95];
- Antibiotic like systems, antimycotic systems.[66,67,91]

2.1.4. Lectins and enzymes

- General aspects[6,8,56-59,65,66,69,70,85];
- (Multi)probiotic oxidoreductases[45];
- Protease systems of strains.[71]

2.1.5. Methods, microanalysis, methodologies, technologies, algorhythms

- Fluorescence[33,38,71];
- Chemiluminescence[3,38];
- Erytropoietin[21,26,55,83];
- Mapping of immune sandwich to cytokine[26];
- Typing of strains[12];

- Evaluation of the antagonism of microorganisms, stabilization of microbiocenosis, the effect of antibiotics[24,28,47,62];
- Mini bioreactor[39];
- Metabolite multiprobiotics: approaches for constructing, multiprobiotic formulas[54,60];
- Glycoconjugates in prognostic analysis[72,96];
- Symbiotic/probiotic systems for innovations.[94]

2.1.6. Aspects of prophylaxis and therapy

- Healthy status of mother and child[51];
- Biomarkers of diseases[3, 10, 12, 17, 26, 81];
- Antitumor agents[48, 49];
- Antimicrobial, antifungal, upon dysbiosis[4, 13-15, 16, 29, 30, 41, 47, 86, 87];
- Autoimmune diseases[81];
- Kidney failure[26, 55];
- Major non-antibody immunity systems against diseases.[73]

2.1.7. Concepts

- Probiotic lectins: microbiocenosis functional organizers[42];
- Imitators of probiotics[18, 19];
- Metabolomebiotics[79, 80];
- Signalling[1, 75, 90];
- Communicative bodies of microbial massifs[9, 16, 22, 27];
- Mucosal organs[34, 37, 63, 64];
- Microorganisms as leaders[36];
- Antibiotic like systems of probiotics (bifidobacteria, lactobacilli)[66, 67, 91];
- New class of pathogen biofilm destructors[4];
- New antimicrobial preparations.[4, 14, 38, 92, 94]

3. CONCLUSIONS

Results indicate that lectin systems are perspective objects of investigation; as additional synergistical agents and cofactors of bioeffectors in recognition and assembling: in medical biotechnology, prophylaxis and therapy, construction of bioadditives and system drugs as well as their delivery and realization in biotopes; in applications in medical immunology and bio(nano)technologhies, clinical microbiology and molecular pharmacology. Conceps proposed on results allow to prognose, diagnose and prevent negative events in human

organism interactome non-immunoglobulin protective networks. They serve a basis for strategical individual patient planning steps before therapy, therapy, and post therapy (post surgery stabilization, acceleration of rehabilitation).

Disclosure of conflict of interest

The authors declare no conflict of interest.

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