

METABIOTICS AS A REMEDY OF RESTORING THE MICROBIAL ECOLOGY OF MACROORGANISM

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Recently, metabiotics have been increasingly used to restore the microbial ecology of the host organism.

Key words: metabiotics, normobiota, microbiota, normal microflora.

Metabiotics are structural components of probiotic microorganisms and/ or their metabolites and/ or signaling molecules with a known chemical structure. Metabiotics can influence metabolic and signaling pathways of the microbiome and/ or host, optimizing the composition and function of the local microbiota and host-specific physiology, immunity, and neuro-hormone biology, as well as regulating metabolic and/ or behavioral responses associated with the activity of the host microbiota. Various probiotic strains can be a source of metabolic substances. Metabiotics are also known by various names such as metabolic probiotics, postbiotics, ghostprobiotic, heat-killed probiotic, biogenics, cell free supernatants, "biological preparations" or "pharmacobiotics".

Metabiotics have certain advantages over classical probiotics: - a certain chemical structure; - a certain dosage; - safety; - long shelf life.

In addition, metabiotics are superior in absorption, metabolism, distribution and excretion compared to classical probiotics based on live microorganisms. Metabiotics exhibit broad inhibitory activity against various types of pathogens. Metabiotic substances contain various metabolites and signaling molecules that exhibit a broad antibacterial spectrum and immunomodulatory effects.

Using of metabiotics makes it possible to create a controlled intestinal microbiocenosis. Metabiotics are characterized by high bioavailability, do not come into conflict with their own microbiota, start working as soon as they enter the gastrointestinal tract (GIT).

Characteristics of metabiotics: - modulation of physiology and metabolism; - local and systemic effect; - regulation of metagenomic stability; - membrane permeability; - attachment to specific surface cell receptors; - epigenetic control; - are capable of diffusion into the body fluid.

Metabiotics include various low molecular weight molecules with a variety of chemical manifestations. The main types of metabiotics can be classified as follows: metabolic molecules; signaling molecules; molecules with a specific structure and function.

Technological advances based on "ohmic" technologies such as transcriptomics, metabolomics, proteomics and others have provided important information for the discovery of a more potential permanent strain for the production of metabiotics. Genome analysis of probiotics and its subsequent functional characterization, now referred to as probiogenomics, has provided exciting new opportunities for identifying metabiotic components that are responsible for influencing the physiology and immune function of their respective host. These approaches hold the promise of broadening metabiotic knowledge, providing opportunities for the development of therapeutic approaches.

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