LACTIC ACID BACTERIA AS INGREDIENTS OF PROBIOTIC PREPARATIONS

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Lactic acid bacteria have a long and extensive application record as probiotic strains. Lately, due to wide-spread use of molecular-genetic, transcirptomic, proteomic, metabolomic etc. studies and the massive accumulation of data on the structure and functions of symbiotic intestinal microbiota, the interest in probiotic microorganisms tends to expand year-by-year. Lactic acid bacteria were the first used probiotic species, are still of sharp market demand and have been recognized as the most thoroughly studied microbes among functional relatives. However, characteristics inherent to probiotic bacteria are strain-specific, as a rule, and for preparations with defined purpose it is essential to select special strains showing a complex of appropriate properties. It accentuates the top relevance of research aimed at selection of lactic acid bacterial strains suitable for diverse probiotic preparations. For several decades we curried out investigations to isolate strains of lactic acid bacteria from various natural sources, to characterize their properties and to derive technologies of producing pro- and prebiotic preparations for farm stock, poultry, veterinary practice, food processing, cosmetic formulas, etc.

Enrichment, in addition to bifidobacteria, of probiotic product Poultrybac with lactic acid bacteria showing high antagonistic activity toward pathogen *Salmonella typhimurium* and producing enzymes capable to hydrolyze feed oligo- and polysaccharides, promotes prevention of salmonellosis cases, normalizes gut microbiocenosis, contributes to assimilation of fodder, accelerates growth of broilers.

Bacteria of genera *Lacticaseibacillus*, *Limosilactobacillus*, *Lactococcus* constitute bacterial preparation Bilametrit designed for prophylaxis and complex therapy of endometrites in cows, actively suppress growth of pathogenic microorganisms of the genera *Staphylococcus*, *Streptococcus*, *Pseudomonas*, *Salmonella*, *Escherichia*, including isolates from uterus exudate from animals with post-partum endometritis. Owing to the pronounced adhesive ability to protein ligands the selected lactic acid bacteria recover microbiocenosis in reproductive system, especially after antibiotic therapy, facilitate regeneration of endometrium, produce organic acids, antimicrobial peptides, amino acids, enzymes of carbohydrate and protein metabolism.

Inclusion, in addition to bifidobacteria, of microorganisms of genus *Lactiplantibacillus* with a high antagonistic activity against pathogenic and opportunistic microorganisms responsible for inflammation of the mammary gland in animals as component of dry probiotic preparation Bactomast shifts the bias of the mammary gland biocenosis towards lactic acid bacteria, curtails general insemination level 2.4–4.8 times, provides a shield protecting from penetration of pathogenic agents, decreases the ratio of somatic cells in milk. The constituent bacterial strains raise non-specific macro host resistance, display tolerance to a series of antimicrobial compounds (antibiotics of aminoglycoside and cephalosporin groups), allowing to recommend it for comprehensive therapy of mastites in cows. Bactomast is not inferior to veterinary drug iodomastin in therapeutic efficacy (83.3%).

A crucial characteristic of the above-mentioned preparations, as well as probiotics Lactimet, Bilavet (liquid form), Bilavet-C (dry product), complex probiotic Synvet, probiotic ingredient Lyobact in whole milk substitutes, dry bacterial concentrate IM-pro fortifying dairy products with probiotics is that they are safe and eco-friendly, i.e. they will not cause adverse effects on the body and reproductive functions of humans, animals, poultry, are not accompanied by health complications, do not deteriorate quality of milk and meat products. Farm products may be consumed without restraints following treatment with biopreparations.