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COMPARISON OF AUTOPROBIOTIC AND PROBIOTIC IN RESTORING INTESTINAL MICROBIOTA AND DIGESTIVE FUNCTION AFTER EXPERIMENTAL DYSBIOSIS IN RATS

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Statement of the Problem: The interplay between the intestinal microbiota and epithelium is an important determinant of host health and nutritional status. Although probiotic bacteria are widely used to prevent and treat the intestinal dysbiosis, their effects on the microbiota and the digestive system compared with indigenous (autoprobiotic) strains have not been investigated. This study aims to evaluate the condition of microbiota and the activity of intestinal enzymes after correction of experimental dysbiosis in rats using probiotic (*Enterococcus faecium* L3) and autoprobiotic (12 strains of *E. faecium*).

Methodology & Theoretical Orientation: The experimental dysbiosis in rats induced by administration of ampicillin and metronidazole. Then rats were getting probiotic, autoprobiotic or phosphate buffer (PBS, control-2). In control-1, after administration of water, rats obtained PBS. At the end of the experiment, samples of epithelium and chyme were analyzed biochemically. Fecal samples were studied bacteriologically and by real time PCR.

Findings: After using probiotic or autoprobiotic, dyspeptic symptoms and microbiota disorders disappeared faster than in control-2. Autoprobiotic, but not probiotic, promoted bifidogenic effect and increased populations of *E. coli* and *Fecalobacterium sp.* in feces. Aminopeptidase N activity decreased in the epithelium or tended to decrease in the chyme after use autoprobiotic. Tissue-nonspecific alkaline phosphatase activity, separated from the total activity by inhibiting levamisole, tended to decrease in the epithelium after use autoprobiotic, and Intestinal alkaline phosphatase – in the epithelium and the chyme after use autoprobiotic or probiotic. Maltase activity in the chyme tended to increase after use autoprobiotic, but tended to decrease after use probiotic.

Conclusion & Significance: Specific effects of probiotic and autoprobiotic enterococci on intestinal microbiota and digestion have been demonstrated. The results may be useful for development of a new therapeutic strategy based on autoprobiotic usage in the correction of intestinal dysbiosis. The work was supported by the Russian Science Foundation Number: 16-15-10085.

Biography

Savochkina Elizabeth V was graduated in 2016 from the Faculty of Biology in the St. Petersburg State University with the specialization in biology. During undergraduate and graduate studies she gained research experience in the field of histology at the Department of Histology, Cytology and Immunology. In addition, she attended a one-year course of "Bioinformatics for Biologists" in the St. Petersburg National Research University of RAS. She is currently working as a junior researcher of Laboratory of Nutrition Physiology in the Pavlov Institute of Physiology, RAS. She has experience of scientific work with laboratory animals, in techniques of immunofluorescence and confocal microscopy in identification of the presence of glucose transporters SGLT1 and GLUT2 in the apical membrane of the rat enterocytes.

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