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Probiotics for mitigation of heat stress-related complications

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Exposure to high environmental temperatures is considered to be one of the most deadly conditions, affecting human and animal health. Relatively small increase in internal temperature can lead to injury and even death. It was shown that heat stress results in a significant damage of the barrier function of the gut causing increased permeability of the gut epithelium. This increased gastrointestinal permeability is a key factor in producing symptoms of heatstroke by triggering the systemic inflammatory response, which lead to necrosis of organ tissues and multi-organ failure. Prevention of the gut permeability would offer a significant benefit in mitigation of the heat stress impact. Gut microbiota is critical in keeping mucosal barrier function. Stability of gut microbiota determines the ability of the organism to tolerate stress. Thus, modulating the intestinal microbiota by probiotics may be a novel, non-invasive therapeutic approach for prevention of heat stress-related adverse effects. We demonstrated that oral pretreatment of rats with *Bacillus subtilis* probiotic before exposure to heat protects animals from damage of intestine, translocation of bacteria from the gut, elevation of lipopolysaccharides and cytokines levels in the blood, increasing vesiculation of erythrocytes. We can speculate that some substances, produced by *B. subtilis* strain can contribute to the gut integrity and protection of the mucosal barrier function.

Biography

Iryna Sorokulova, Professor of Microbiology received her MS degree in Microbiology from Taras Shevchenko Kiev State University (Ukraine), PhD and DSc degrees in Microbiology from the Institute of Microbiology and Virology, National Academy of Sciences of Ukraine. She has received a solid background in formulation and regulation of biological products during the training courses in Bureau of Biologics (Ottawa, Canada) and Massachusetts Biologic Laboratories (Boston, USA). She is an editorial board member of several reputed journals. She is the author of 82 refereed scientific publications, 4 books, and 23 patents.

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