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Probiotic lactobacilli in antioxidative defence

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Abstract

In humans severe oxidative stress (oxS) is involved in apoptosis, inflammation and necrosis. OxS is caused by an imbalance between the production of reactive oxygen and the detoxification of reactive intermediates. The cellular defense response to oxidative stress includes induction of detoxifying and antioxidant enzymes. Human microbiota composition is intimately associated with different human functions in health and disease. Lactic acid bacteria contain glutathione and express some antioxidative enzymes like superoxide dismutase (Mn-SOD). The presentation lays out the characteristics of the US, EU and Russia patented probiotic strain *Lactobacillus fermentum* ME-3 DSM. The Estonian probiotic strain *L. fermentum* ME-3 contained both glutathione peroxidase and glutathione reductase enabling the synthesis of GSH. The probiotic strain was elaborated according to the regulations of WHO/FAO (2002). In experimental settings and several clinical trials on volunteers and patients the probiotic has expressed the ability to increase the anti-oxidative activity of blood sera, improve the composition of LDL particles, lower the postprandial triglycerides level and the content of urine 8-isoprostanes. A special industrial technology has been developed to incorporate the new probiotics into dairy food products. The effect onant oxidative markers of blood and urine expressed by lactic acid bacteria can be considered as health improvement due to lowered oxidative stress.

Biography

Marika Mikelsaar, MD is professor emeritus, e.o. leading researcher of University of Tartu. She has defended her Ph.D. at University of Tartu in 1969 and obtained the degree of DSci in 1992. She is a specialist in medical microbiology, human microbial ecology, and biomedicine. She has published more than 100 papers in international journals. Her current research focuses for the impact of microbiota and *Lactobacillus* sp. on host metabolic functions in health and disease. M. Mikelsaar is past president of International Society for Microbial Ecology (SOMED), board member of International Association for Gnotobiology, editorial board member of some microbiological journals.

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