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Potential applications of probiotics for the gut and beyond

Probiotics are microorganisms that confer health benefits on the host when administered in adequate amounts and have received increasing attention recently. Conventionally, probiotics have been used as a natural alternative to improve gut health, including the alleviation of lactose intolerance and improvement of digestion. Now, emerging research suggests that probiotics could have benefits that extend beyond the gut in which they modulate various physiological functions that can be used in prophylactic and therapeutic settings. There are evidences to support the use of probiotics to control and prevent hypercholesterolemia, and thereby reduce the risks for obesity and coronary heart disease. Furthermore, *in vivo* studies have also shown positive effects of probiotics on bone metabolism, bone mineral density and strength, and could thus be a postulated treatment for osteoporosis. On the other hand, certain probiotics can contribute to modulate pro- and anti-inflammatory cytokines, T helper cell function, and NF- κ B signaling, leading to the improvement of immunity in inflammatory metabolic diseases. Evidences have also indicated that probiotics can be used to treat alcohol-induced liver damage in rats, including the reduction of endotoxin levels and improvement of liver transaminases. The positive effects of probiotics on oxidative stress, corticosterone, and GABA, may also ultimately relieving stress and tension. Recent data further indicate that probiotics could produce inhibitive and bioactive compounds that may be beneficial to skin health, as well as rheumatoid arthritis. My talk highlights recent findings on the potential health benefits of probiotics beyond the gut, and possible biological mechanisms by which probiotics confer those health benefits.

Biography

Sae-Hun Kim is a Professor at the College of Life Science and Biotechnology, Korea University, South Korea. He completed his Ph.D. majoring in Food Science at Oklahoma State University, Oklahoma, USA in 1992. He has published over 76 papers in scientific journals, and 3 book chapters. He is also the chairman of Korean Dairy Technology and Science Association. Prof. Kim has also attended and delivered lecturers at domestic and international academic conferences and congresses. His research interests focus on probiotics and probiotic-derived bioactives to improve human health and well being, and the development of functional bio-products.

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