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Anti-obesity effect of kefir-derived exopolysaccharides

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Physiological properties of water-soluble exopolysaccharides (EPS) and their remained residues after removal of EPS from probiotic kefir were determined in C57BL/6J mice fed a high-fat diet. EPS solutions had rheological properties and lower viscosity than β-glucan (BG). EPS significantly suppressed the adipogenesis of 3T3-L1 preadipocytes in a dose-dependent manner. Mice were fed high-fat (HF) diets containing 5% EPS, 5% □-glucan (BG, viscous soluble fiber), 8% residues, or microcrystalline cellulose (control) for 4 weeks. EPS supplementation significantly reduced HF diet-induced body weight gain, adipose tissue weight, and plasma VLDL-cholesterol concentration compared with the control ($p<0.05$). The residues and BG also significantly reduced body weight gain, but reduction of adipose tissue weight did not reach statistical significance, suggesting anti-obesity effect of EPS is due to viscosity as well as possible additional factor. EPS supplementation significantly enhanced abundance of genera Akkermansia in feces. These data indicate that EPS has significant anti-obesity effects, which is possibly involved in altered intestinal microbiota.

Biography

Hyunsook Kim is an expert in the development of new functional natural food ingredients as an effective means of managing weight and decreasing risk factors for obesity and related metabolic disease. She adds value in byproduct waste from fruit and vegetable processing and also potentiates their effectiveness after combined with probiotic lactic acid from fermented foods. Using high-throughput techniques including nutrigenomics, metabolomics, metagenomics, and biochemical analysis, she is trying to determine novel pathways and bioactive components involved in intestinal microbiota, innate immunity, inflammation, intestinal permeability, lipid metabolism, gut-derived hormones, adipose-derived hormones that improve obesity and related metabolic diseases.

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