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Soybean soluble polysaccharide enhances absorption of soybean genistein in mice

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Abstract

This study was designed to probe the promoting effects of soybean soluble polysaccharide (SSPS) on bioavailability of genistein in mice and the underlying molecular mechanism. Male Kunming mice (n = 8) were administered intragastrically with either saline, SSPS (5 mg/kg·bw), genistein (100 mg/kg·bw), or SSPS (5 or 50 mg/kg·bw) together with genistein (100 mg/kg·bw) for consecutive 28 days. UPLC-qTOF/MS analysis showed that co-administeration of SSPS and genistein in mice caused significant elevation in the urinary levels of genistein and its metabolites (p<0.05). Furthermore, the fecal excretion of genistein was also enhanced by co-administration of SSPS. However, the feces level of dihydrogenistein, a characteristic metabolite of genistein degraded by gut microorganism, was dose-dependently decreased by the combined treatment of SSPS. Additionally, co-treatment of SSPS with genistein also decreased the small intestinal levels of uridinediphosphate-glucuronosyltransferase (UGT), sulfotransferase (SULT), P-glycoprotein