Da Sol Kim et al., Med Aromat Plants 2017, 6:6 (Suppl)
DOI: 10.4172/2167-0412-C1-015

Korean fermented soybeans and their phytochemicals prevent and alleviate metabolic diseases by modulating the insulin signaling pathway

Da Sol Kim[1], Byoung-Seob Ko[2], Jin A Ryuk[2], Sunmin Park
[1]Hoseo University, Republic of Korea
[2]Korea Institute of Oriental Medicine, Republic of Korea

Metabolic diseases such as diabetes, hypertension, dyslipidemia, obesity, stroke, retinopathy, myocardial infarction and neurodegeneration are interrelated with increased insulin resistance by attenuated insulin signaling in different tissues. Korean traditional fermented foods are symbiotic foods that can modulate gut microbiomes and reduce the symptoms of metabolic diseases. Korean fermented foods have enhanced bioactivities over the original foods. For example, soybeans contain various phytoestrogens that improve energy, glucose and bone metabolism. However, their bioavailability is low. Fermentation changes the structure of phytoestrogens to form isoflavonoid aglycones, DDMP soyasaponin βg, E soyasaponin Be and lysophosphatidylcholines. These fermentation products are absorbed better in the gut and exhibit enhanced functionality for metabolism. Bioactivities of fermented foods are modified by the major microorganisms that ferment them. Soybeans are traditionally fermented with *Bacillus licheniformis* (chungkookjang) and *Aspergillus oryzae* (meju), without added salt, improve insulin sensitivity and insulinotropic actions better than unfermented soybeans in non-obese type 2 diabetic rats fed high fat diets. This improvement is associated with potentiating insulin signaling in the liver and pancreatic islets. Chungkookjang made with *Bacillus licheniformis* decreases the accumulation of β-amyloid deposits in rats with β-amyloid (25-35) infusion into the CA1 region. Therefore, traditional Korean fermentation of soybean foods improves their bioactivities including gut microbiomes for alleviating metabolic diseases, especially type 2 diabetes and Alzheimer's disease.

Biography

Da Sol Kim is a Ph.D student of nutrition. Her expertise is in the study of diabetes with an emphasis on the etiology of Asian type 2 diabetes. Type 2 diabetes involves various organs of the body, and much of her recent research has focused on the modulation of insulin signaling in the brain and liver.

smpark@hoseo.edu

Notes: