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ANTIADIPOGENIC EFFECTS OF STEAMED GINGER IN 3T3-L1 PREADIPOCYTES AND DIET INDUCED OBESE MICE

Youn-Soo Cha, Hee-Jeong Kim, Jung Eun Park and Bohkyung Kim

¹Pusan National University, Korea

²Chonbuk National University, Korea

Ginger, a popular spice and root vegetable worldwide, is known to have effects on adipogenesis. Whether ginger is used as a spice or traditional medicine, it may undergo the steaming process. The steaming process can affect the composition and functional activities of ginger. In the present study, we investigated the effects of steamed ginger (SGE) on the differentiation of 3T3-L1 preadipocytes and obesity induced by high-fat in mice. SGE significantly decreased lipid accumulation with concomitant downregulation of adipogenesis-related genes in 3T3-L1 cells. Male C57BL/6J mice were fed normal diet (ND, 10% fat by weight), high-fat diet (HFD, 60% fat by weight), HFD supplemented with either 40 mg/kg or 80 mg/kg of SGE by weight (SGED4 or SGED8, respectively) for 12 weeks. SGE supplementation significantly attenuated the HFD-induced body, liver and epididymal adipose tissue weight gain. In the SGED4 and SGED8 groups, the increased serum total cholesterol (TC), triglycerides (TG) and glucose levels by HFD were significantly decreased. SGE altered adipogenesis-related genes followed by decreases in the size of adipocytes in the adipose tissue. The high levels of hepatic TC and TG by HFD were significantly decreased by SGE with concomitant alteration of hepatic genes involved in lipid metabolism. In conclusion, steamed ginger may have anti-obesity effects by regulating the adipogenic genes in 3T3-L1 cell and obesity induced by HFD.

Biography

Youn-Soo Cha has completed her PhD in nutritional biochemistry on the lipid metabolism from the University of Tennessee. Currently, she is a Professor in the Dept of Food Science and Human Nutrition at Chonbuk National University in South Korea. Her research area includes analysing the health benefit of various foods including Korean traditional fermented foods and their bioactive compounds, through cell line and animal studies and clinical trial. Especially, her current focus is on providing a scientific research to establish Korean paradox, based on an epidemiological observation that Korean people have low incidence of hypertension, CHD etc., even though they mainly consume Korean traditional fermented foods that contains high amount salt. She has published more than 190 papers in reputed journals and is a Member of Korean Academy of Science and Technology. Now, she is the President of the Korean Nutrition Society (2018), the Agro BioFood R&D Institute and the Obesity Research Center of Chonbuk National University.

Cha8@jbnu.ac.kr