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Anti-Diabetic Effect of High Purity Epigallocatechin Gallate from Green Tea

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Abstract : Green tea, which is one of the most popular of tea, contains various ingredients that help health. Epigallocatechin gallate (EGCG) is one of the main active polyphenolic compound possessing diverse biologically beneficial effects such as anti-oxidation, anti-cancer founding in green tea. This study was performed to investigate the anti-diabetic effect of high-purity EGCG (> 98%) in a spontaneous diabetic mellitus animal model, db/db mouse. Four-week-old male db/db mice, which was induced to diabetic mellitus by the high-fat diet, were orally administered with high-purity EGCG (10, 50 and 100 mg/kg) for 4 weeks. Daily weight and diet efficiency were examined, and blood glucose level was assessed once a week. After 4 weeks of EGCG administration, fasting blood glucose level was measured. Then, the mice were sacrificed and total abdominal fat was sampled to examine the change in fat weight. Plasma was separated from the blood and the levels of aspartate amino-transferase (ALT) and alanine amino-transferase (AST) were investigated. As results, blood glucose and body weight were significantly decreased by EGCG treatment compared to the control group. Also, the amount of abdominal fat was down-regulated by EGCG. However, ALT and AST levels, which are indicators of liver function, were similar to those of control group. Taken together, our study suggests that high purity EGCG is capable of treating diabetes mellitus based in db / db mice with safety and has a potent to develop a therapeutics for metabolic disorders. This work was supported by Korea Institute of Planning and Evaluation for Technology in Food, Agriculture, Forestry (IPET) through High Value-added Food Technology Development Program, funded by Ministry of Agriculture, Food and Rural Affairs (MAFRA) (317034-03-2-HD030)
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