Inhibition of Impaired Glucose Tolerance by Sake Lees in the Type 2 Diabetic Mouse Strain KK-Ay

Abstract

Sake lees, a byproduct of the *sake* brewing process generated after pressing, is mostly disposed of as industrial waste. However, sake lees not only contains rice-derived components but also yeast and *koji* mold components and their metabolites. These are highly nutritious and have been reported to have various physiological functions. In this study, we examined the effects of mixing freeze-dried sake lees into the diet of model mice with type 2 diabetes. Mice fed with the sake lees-mixed diet for 40 days showed lower serum glucose levels than the control group. The results of the oral glucose tolerance test performed on the sake lees-fed mice showed a decrease in the diabetic phenotype characterized by a decrease in serum insulin levels and a significant increase in serum adiponectin levels. Furthermore, the expression of glucose transporter 4 mRNA in skeletal muscles was increased significantly in the sake lees-mixed diet group. These results suggest that consumption of freeze-dried sake lees may improve impaired glucose tolerance in patients with type 2 diabetes.