

Effect of hypocholesterolemic properties of brown rice varieties containing different Gamma Amino Butyric Acid (GABA) levels on Sprague-Dawley male rats

Abstract

Brown rice (BR) or unmilled rice is the whole grain of rice, from which the germ and outer layers containing the bran have not been removed. Brown rice seeds are rich in more nutritional components, such as dietary fibers, vitamins B and E, gamma (γ)-oryzanol and γ -amino butyric acid (GABA) than the ordinary milled rice grains. GABA or 4-aminobutyrate is a well known non-protein-based amino acid that is one of the major inhibitory neurotransmitters in the sympathetic nervous system. In the present study, the influence of brown rice varieties containing different GABA levels on blood cholesterol in Sprague-Dawley male rats was investigated. Quantitative analysis of GABA, Gamma oryzanol, dietary fiber, protein and fat was carried out using appropriate method. Hypercholesterolemia and elevation of LDL-cholesterol was successfully ameliorated by most of the brown rice diets (< 0.05). A significant negative correlation (< 0.05) between serum TC level and γ -oryzanol content of diets was observed. Moreover, a significant negative correlation (< 0.05) between serum LDL-C level and dietary fiber content of diets was observed. In contrast, there was no correlation between GABA content and TC, LDL-C, HDL-C and glucose levels. Although no correlation was found between GABA content and lipid profile suppression, this study suggests that the changes of blood cholesterol can be modulated by using brown rice varieties instead of polished rice in human diet. Even though GABA not played a role for prediction of lipid profile changes, this study was capable to show the hypercholesterolemic effect of brown rice varieties.