

A beverage containing fermented black soybean ameliorates ferric nitrilotriacetate-induced renal oxidative damage in rats

Abstract

It is beneficial to seek scientific basis for the effects of functional foods. Natural pigments derived from plants are widely known as possible antioxidants. Black soybean contains a larger amount of anthocyanins than regular soybean. Here we studied the antioxidative effect of a beverage obtained via citric acid fermentation of black soybean (BBS), using a rat model of renal oxidative injury induced by a renal carcinogen, ferric nitrilotriacetate. BBS (10 ml/kg) was orally administered 30 min before ferric nitrilotriacetate treatment. Renal lipid peroxidation was significantly suppressed in the BBS-pretreated animals concomitant with decrease in 4-hydroxy-2-nonenal-modified proteins and 8-hydroxy-2'-deoxyguanosine. Maintenance of renal activities of antioxidative enzymes including catalase, glutathione peroxidase, glutathione reductase, glutathione S-transferase, glucose-6-phosphate dehydrogenase and quinone reductase was significantly better in the BBS-pretreated rats. Elevation of serum creatinine and urea nitrogen was significantly suppressed in the BBS-pretreated rats. These data suggest that dietary intake of BBS is useful for the prevention of renal tubular oxidative damage mediate by iron, and warrant further investigation.