

Broccoli Sprouts Powder Could Improve Metabolic and Liver Disorder-Induced by High-Fructose Corn Syrup

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Abstract : Background and Aim: Broccoli sprouts, rich source of bioactive compounds specially sulforaphane (SFN), have unique functional properties. This study was conducted to investigate the possible treatment effects of high-SFN broccoli sprouts powder on metabolic and liver disorders in rats fed with high-fructose corn syrup. Methods: Thirty-two male wistar rats, pretreated with an eight-week high-fructose diet (water containing 30% fructose), were randomly allocated into three groups: Baseline control (BC), control (C) (normal diet), and BSP-diet (normal diet+5% BSP). The duration of the study was 6 weeks. Biochemical measurements, liver weight and triglyceride content were evaluated and histopathological examination of liver was performed. Results: After 6-weeks, the liver weight was significantly lower in BSP group compared to controls (13.4 g vs. 11.4 g, $P<0.05$). After 6 weeks, a significant decrease was observed in fasting serum glucose, total cholesterol and triglyceride levels in both experimental groups ($P<0.05$). Compared to controls, serum levels of HDL-C were significantly higher in BSP group. The liver TG content in BSP compared to control group was lower (14.6 vs. 16.4 mg/mg tissue). The hepatic levels of alanine aminotransferase, aspartate aminotransferase and γ -glutamyl transferase had not considerable changes in the groups after the intervention period but the level of alkaline phosphatase significantly decreased in BSP group ($P<0.05$). The histopathological examination of liver confirmed a decrease lobular and portal inflammation and ballooning in BSP group compared to control. Conclusion: High-SFN broccoli sprouts powder has beneficial effect on metabolic and liver changes-induced by high fructose corn syrup.

Keywords : broccoli sprouts, metabolic disorders, fatty liver, food science

Conference Title : ICFSN 2015 : International Conference on Food Science and Nutrition

Conference Location : London, United Kingdom

Conference Dates : June 28-29, 2015