

## Antioxidant Effects of Isoflavone Extracted from Soybean Paste on free Radical Initiator in Rats

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The objective of this study was to compare the antioxidant effects of isoflavone (especially genistein, daidzein) extracted from soybean paste to ascorbic acid on 2,2'-azobis(2-amidinopropane) dihydrochloride (AAPH)- induced liver damage in rats. First of all, we compared to isoflavone contents (genistein and daidzein) in soybean sauce, red pepper paste, soy sauce by RP-HPLC analysis. Levels of isoflavones in fermented soy products, soybean paste, red pepper paste and soy sauce were 28.85, 30.32, 3.37 µg/g for daidzein and 244.26, 187.68, 6.10 µg/g for genistein. In the thirty healthy Sprague Dawley male rats were used for this experiment, and divided into the following groups : Normal control group, AAPH treated group, Vit C-AAPH treated group, isoflavone extracted from soybean paste(SPE) group, SPE - AAPH treated group. Rats were pretreated with SPE p.o. (200mg/kg body weight), ascorbate (0.9mg/kg body weight) for 9 days. On the last day of AAPH, SPE-AAPH, & Vit C-AAPH group was administered i.p. at a single dose of 60mg/kg 24 hr before the animals were sacrificed. AAPH treated group showed higher activities of GOT and GPT and increased lipid hydroperoxide amount in plasma and liver. The GOT and GPT levels were significantly increased in AAPH treated group, the lower in SPE-AAPH group compared to AAPH, Vit C AAPH treated group. ( $p < 0.05$ ) Total cholesterol and triglyceride levels were the lowest in SPE-AAPH group. In the liver tissue treated with AAPH, significantly increased the thiobarbutric acid reactive substance (TBARS) production which are used as index of oxidative stress. ( $p < 0.05$ ) In the plasma and liver, The TBARS of SPE-AAPH group was significantly similar to those of control group. Compared to AAPH treated group, SPE and Vit C treated group was significantly decreased TBARS levels in the plasma and liver. In antioxidant enzyme activities, glutathione peroxidase (GPx) and glutathione reductase (GR) and catalase in the liver significantly ( $p < 0.05$ ) decreased by AAPH. Antioxidant enzyme activities in liver tissue were significantly increased by SPE and Vit C administration. Accordingly, SPE significantly inhibited the reduction of glutathione concentration (GSH), catalase and GR. Vit C protected the reduction of catalase and GPx. ( $p < 0.05$ ) The change of the glutathione (GSH) concentration was expressed the highest in the SPE group compared of others groups. ( $p < 0.05$ ) These results suggest that SPE administration may inhibit the formation of malonaldehyde on the free radical and suppress the cellular detoxifying system activity through reduction of glutathione utilization.