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EFFECT OF QUERCETIN INGESTION ON PEROXIDATION AND GLUTATHIONE-RELATED ENZYME ACTIVITIES IN RAT LIVER

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Quercetin, a polyphenolic compound, is one of the most widely distributed flavonols in plants and vegetables. Quercetin has been known to provide strong antioxidant activity and various physiologically beneficial effects. In vitro study, quercetin has shown to scavenge the peroxy radical and suppress the low density lipoprotein oxidation. Present study was conducted to investigate the effect of orally administered quercetin on peroxidation of liver tissue, and on hepatic glutathione-related enzyme activities in rats. Twenty, adult Sprague Dawley, male rats were divided into four dietary groups; a negative control diet group (-CON) containing no vitamin E, a positive control diet (+CON) group added with vitamin E and two dietary groups with orally administered quercetin (2 or 10 μ M quercetin/kg body weight) while feeding the +CON diet. The diets fed four weeks consisted of purified-type ingredients basically based on the formulation of AIN-93M diet with modification in vitamin E content as desired.

Levels of malondialdehyde (MDA) were measured with TBARS assay as an indicator for lipid peroxidation. MDA formation in rat liver appeared to be inhibited by feeding higher level of quercetin with a significance at $p < 0.05$ compared to the other groups. The liver of the former group also showed lower GSH and glutathione reductase activity compared to those of +CON group. GSH peroxidase activities were not changed significantly by the treatments. Hepatic vitamin E levels were not significantly different among the dietary groups except -CON group, suggesting that quercetin seem to prevent lipid peroxidation in liver tissues with no direct relationship with vitamin E. In conclusion, quercetin could prevent lipid peroxidation in liver tissues in vivo.