

Effect of natural polyphenolic type antioxidants (*Sempervivum tectorum* L. and *Raphanus sativus* L. var *niger* extracts) on metal ion concentration in rat bile fluid

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Sempervivum tectorum and *Raphanus sativus* extracts were examined for antioxidant activity *in vivo*. Antioxidant activity and ion concentrations in bile fluid of six groups of male Wistar albino rats were investigated (control, control supplemented with extracts, hyperlipidemic, hyperlipidemic treated with the extracts). By the treatment with extracts, the relative light unit (RLU %) of the rat bile juice samples decreased compared to that in fatty liver ($75.0 \pm 13.4\%$ for black radish root and $70.1 \pm 9.9\%$ for stonecrop extract) measured by chemiluminometry. Favorable changes in ion concentration were observed in the bile fluid of animals treated with the extracts. In both experiments the concentration of chromium, iron, phosphorus and sulfur in bile fluid changed significantly by the treatment with the extracts compared to that in hyperlipidemy. Other significant changes in the calcium and copper concentration have also been observed owing to the effect of *Sempervivum tectorum* or *Raphanus sativus* extract.