

LIPID PEROXIDATION AND ZINC AND COPPER STATUS IN HEALTHY ADULTS AFTER GINSENG INGESTION

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We investigated the relations between duration of ginseng ingestion, lipid peroxidation and Cu and Zn status in 17 healthy adult volunteers provided with identical amount of *Panax ginseng* root. Plasma malondialdehyde and serum Zn and Cu were evaluated in 9 women and 8 men, who received 2g daily of root powder during 4 weeks. Serum malondialdehyde concentrations were measured as the product generated by the reaction between thiobarbituric acid (TBA) and malondialdehyde and were analyzed by spectrophotometry (Pye Unicam SP6-400 UV). Serum Cu and Zn concentrations were determined with an atomic absorption spectrophotometer (Perkin-Elmer 272). These parameters were measured at the beginning of the experiment, in the course of ginseng ingestion (3, 8 and 24 hours and 1, 2, 3 and 4 weeks) and 1 week after the last ginseng ingestion. The Spearman test and stepwise multiple regression analysis were used to examine the relations. Simple correlations between the duration of ginseng ingestion and plasma malondialdehyde showed no association in women ($r = -0.05$) nor in men ($r = -0.316$). In all group studied Cu serum concentrations after 24h. ($r = 0.512$, $P < 0.05$) or 2 weeks of ginseng ingestion ($r = 0.589$, $P < 0.02$) were positively correlated with plasma malondialdehyde, and Zn serum concentrations after 1 week of ginseng ingestion ($r = -0.466$, $P < 0.06$) were negatively correlated with plasma malondialdehyde. Stepwise multiple regression analysis confirmed only the association ($r = 0.62$, $P < 0.01$) between Cu and plasma malondialdehyde. In conclusion, our results confirm that the level of peroxidation stress in healthy adults after 2 weeks of ginseng ingestion was mainly dependent on Cu status.