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EFFECTS OF CIGARETTE SMOKING ON ERYTHROCYTE ANTIOXIDATIVE ENZYME ACTIVITIES AND PLASMA CONCENTRATIONS OF THEIR COFACTORS

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Abstract:

Tobacco smoke contains numerous compounds, many of which are oxidants and capable of producing free radical and enhancing the oxidative stress. The aim of this study was to investigate the effect of cigarette smoking on the erythrocyte antioxidative enzyme activities and the plasma concentration of their cofactors. Sixty eight healthy men were enrolled, 32 of whom had never smoked and 36 had smoked at least 10 cigarettes per day for at least one year. Hemolysate superoxide dismutase (Cu-Zn SOD), glutathione peroxidase (GSH-Px) and catalase (CAT) activities were measured using spectrophotometer. Plasma copper, zinc and selenium concentrations were determined using atomic absorption spectrophotometer. Plasma iron concentration was determined by colorimetric method. We found that erythrocyte Cu-Zn SOD activity was significantly higher in tobacco smokers compared with non-smokers (1294 ± 206.7 U/gHb in smokers vs. 1121.6 ± 237.8 U/gHb in non-smokers, $P < 0.01$). While plasma selenium concentration was significantly lower in tobacco smokers (62.7 ± 14.8 $\mu\text{g/L}$ in smokers vs. 92.1 ± 17.5 $\mu\text{g/L}$ in non-smokers, $P < 0.01$), there were no significant differences in erythrocyte GSH-Px and CAT activities and plasma copper, zinc and iron concentrations between the two groups. It seems that cigarette smoking can alter antioxidative enzymes activity and plasma concentration of some trace elements.

Keywords:

Tobacco . antioxidative enzymes

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