

Influence of Charcoal Broiled Meat Consumption on the Liver Functions and Non-Enzymatic Antioxidants in Human Blood

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ABSTRACT

The effect of ingesting charcoal-broiled beefburgers (CBB) on the liver functions and nonenzymatic antioxidant levels in human blood was examined in twenty-nine healthy individually males (mean age 21.65 ± 1.32 years, range 20.32 - 22.42 years), non-smokers and had no occupational exposure to PAHs, who consumed two charcoal grilled beefburger per day (mean weight 70 gmper each) at lunch time over 28 consecutive days. The mean daily intake of PAH during the consumption period was 3431 ng and the mean daily intake of PAH per kg body wt/day was 46 ng. Blood samples were collected from each subject 7, 14, 21 and 28 days before, during, and after the beefburgers consumption period. glutamic-oxaloacetic transaminase (GOT), glutamic-pyruvate transaminase (GPT) and alkaline phosphatase (ALP) were significantly higher in serum of subjects during CBB consumption period compared with those of before CBB consumption ones. All of the enzyme activities still increased upper the baseline levels, before CBB consumption period, by four week after charcoal broiled meat consumption ended. In contrary, the levels of non-enzymatic antioxidants include albumin (ALB), glutathione in serum (GSH-S) and erythrocytes (GSH-E) were significantly lower in subjects during CBB consumption period compared with those of before CBB consumption ones. All of the non-enzymatic antioxidant levels decreased to near baseline levels, before CBB consumption period, by four week after charcoal broiled meat consumption ended. Results suggested that non-enzymatic antioxidants defense system of serum and erythrocytes was depressed and the erythrocytes as well as liver cells were exposed to oxidant stress due to oral exposure of PAH.

KEYWORDS

PAHs; Grilled Beefburgers; Serum; Erythrocytes; Glutathione

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