

P5: OXIDATIVE STRESS AND PROTEIN DAMAGE IN THALASSEMIA PATIENTS AND SMOKERS

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ABSTRACT

Oxidative stress, an imbalance of the pro-oxidant/antioxidant homeostasis, occurs in several human diseases and environmental exposure. The usage of protein carbonyl group as a marker of oxidative damage has some advantages in comparison with the measurement of other oxidation products because of the early formation and the relative stability of carbonylated proteins. Therefore, the aim of this study was to investigate the oxidative stress in thalassemia patients and smokers by using protein carbonyl contents. Blood samples were collected from children with thalassemia diseases that has regular blood transfusion (n=32) and healthy controls (n= 28). For cigarettes smoking, blood samples were collected from smoker adults (n=18) and non-smoker as control (n=16). Carbonyl contents were analyzed by DNPH assay.

The results showed a significant increase in carbonyl contents in thalassemia patients who have serum ferritin more than 1000 ng/ml when compared with controls ($P < 0.05$). However, no significant difference in protein carbonyl contents between thalassemia and control groups. A significant increase in protein carbonyl contents was found in smokers when compared with control subjects ($P < 0.01$). Carbonyl contents in adults (age = 46.75 ± 7.36 years) was higher than children (age = 11 ± 1.29 years) ($P < 0.001$). A strong positive correlation between age and carbonyl contents was found ($r = 0.84$, $P < 0.001$). These results confirm the oxidative stress and highlight the formation of protein carbonyl in thalassemia patients and smokers.

Key word : Thalassemia, Oxidative stress, Protein carbonyl , Smoking