Catalase Activity in Patients with Ischemic Heart Diseases

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Ischemic Heart Diseases (IHD) are one of the major public health problems in the world. A decrease in the blood supply to the heart due to atherosclerosis or thrombosis is known to induce myocardial ischemia. Following ischemia, reactive oxygen species are produced. However the effect of reactive species is balanced by the antioxidant action. The most efficient enzymatic antioxidants are superoxide dismutase (SOD) and catalase (CAT). SOD catalyzes the dismutation of superoxide anion to hydrogen peroxide (H_2O_2). Subsequently, H_2O_2 is reduced to H_2O and O_2 by peroxidases such as glutathione peroxidase or CAT. The aim of this study was to determine the CAT activity in total blood of patients with IHD. The determination of CAT activity was done by modifications in the method of the Nelson and Kiesow (1972). Forty patients from the Federal University of Santa Maria Hospital with IHD were selected for this study and divided into: acute IHD and chronic IHD. The control group was constituted of twenty healthy individuals. The Human Ethics Committee from the UFSM approved the protocol under number 70/2008. The CAT activity in acute IHD patients was significantly increased (13.62±2.14) compared with chronic IDH (11.90±1.43) and the control group (11.03±1.31). In conclusion, the present work provides evidence for increased levels of CAT in total blood of acute IHD patients, suggesting a mobilization of the antioxidant enzymatic system probable due to increased oxidative stress levels.

Keywords: Catalase; Ischemic Heart Diseases; Oxidative stress.

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