

CATALASE ACTIVITY IN PATIENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA

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Acute lymphoblastic leukemia (ALL) is a disease characterized by an uncontrolled proliferation and maturation arrest of lymphoid progenitor cells in the bone marrow. Neoplasias have an increase in the production of reactive oxygen species (ROS). The intracellular redox state is characterized by a balance between the production of ROS and antioxidant systems. Cells contain ROS scavenging enzymes such as catalase, the primary cellular enzymatic defense systems against H₂O₂. The aim of this study was to determine the catalase activity in total blood of patients with ALL. The determination of catalase activity was done by modifications in the method of Nelson and Kiesow. Eighteen children with ALL under treatment at the Hospital of the Federal University of Santa Maria and twenty disease-free children were involved in this study. The Human Ethics Committee from the Federal University of Santa Maria approved the protocol under number 51/2006. The catalase activity in ALL patients were found to be significantly decreased (6.10 ± 0.70) compared to the levels in disease-free children (7.83 ± 0.65). The results comparisons were analyzed by one-way ANOVA followed by Duncan's multiple range test. Effects were considered significant when $p < 0.05$. The results were expressed as picomoles per milligram protein. In conclusion, the present work provides evidence for decreased levels of catalase in total blood of ALL patients, our results show decreased superoxide dismutase (SOD) activity too, suggesting a exhaustion of the antioxidants defenses of the organism what it can lead to oxidative stress.

Keywords: Acute lymphoblastic leukemia (ALL); Oxidative stress; Catalase

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