

Increased Serum Superoxide Dismutase and Catalase Activities in Streptozotocin-Induced Diabetic Rats

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Abstract

Background and Objective: One of the diabetes complications is the tissue damage caused by the imbalance of oxidants and antioxidants (oxidative stress). The aim of the present study was to evaluate the activity of two antioxidant enzymes -superoxide dismutase and catalase- in the serum of streptozotocin-induced diabetic rats.

Material and Methods: This investigation was conducted on adult male rats assigned to diabetic and control groups. Diabetes was induced by a single intraperitoneal injection of streptozotocin. Seven weeks after diabetes induction, glucose concentration, superoxide dismutase and catalase activities of the serum were assessed.

Results: Glucose concentration of streptozotocin-injected animals was significantly higher than that of control group ($P < 0.001$). The level of Serum superoxide dismutase and catalase activities in diabetes group were significantly higher than those in control group ($P < 0.01$). There was a positive significant correlation between glucose concentration and superoxide dismutase and catalase activities ($P < 0.001$).

Conclusion: The high activity of antioxidant enzymes in diabetic rats is probably due to compensation responses to oxidative stress produced by high concentration of free radicals. It seems that the higher glucose concentration, the greater compensatory responses.

Keywords: Diabetes, Streptozotocin, Antioxidant, Superoxide Dismutase, Catalase