

The Influence of Naringin on the Oxidative State of Rats with Streptozotocin-Induced Acute Hyperglycaemia

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Z. Naturforsch. **59c**, 726–733 (2004); received March 16/May 17, 2004

The effect of various doses (0, 10, 20, 40, or 80 mg/kg body weight) of naringin (a citrus flavonone) was studied on streptozotocin (STZ)-induced hyperglycaemic rats to evaluate the possible hypoglycaemic and antioxidant activity of naringin in diabetes. In comparison to the normoglycaemic group the treatment of rats with a single dose of STZ (65 mg/kg body weight) only revealed a significant increase ($P < 0.05$) in plasma hydrogen peroxide (H_2O_2) by 230%, increased the thiobarbituric acid reactive substances (TBARS) as index of the lipid peroxidation level by 69%, while total antioxidant activity was decreased by 36%, with a consistent significant decrease ($P < 0.05$) in the activity of erythrocytes antioxidative enzymes catalase (CAT), superoxide dismutase (SOD), glutathione peroxidase (GPx), and paraoxonase (PON). Exogenous administration of individual gradual doses of naringin to hyperglycaemic rats causes a dose-dependent decrease of the glucose level, an increase of the insulin concentration, a decrease of the H_2O_2 and TBARS levels, as well as the increase of the total antioxidant status with an increase of antioxidant enzyme activities (CAT, SOD, GPx, and PON). From this study, it may be concluded that all doses of naringin provided a significant amelioration of hypoglycaemic and antioxidant activity in STZ-induced diabetic rats, however, the greatest effect of naringin was observed at 80 mg/kg body weight.

Key words: Naringin, Hyperglycaemia, Antioxidative Enzymes