

## Biochemical Changes Indicated of Oxidative Damage in Early Stages of Type 2 Diabetes in Rats

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The maintenance of normal glucose level in the blood (normoglycemia) is needed to the adequate metabolic functioning of the organism. However, in the hyperglycemia resulting from the high-sucrose intake condition, serious metabolic disorders may occur, such as dyslipidemia and the increase in the markers of oxidative stress. This metabolic abnormality, associated with the tissue insulin resistance, is characteristics of a condition known as early stage of type 2 diabetes. Thus, the aim of this work was to investigate the relationship between the early stage of type 2 diabetes induced by a high – sucrose diet in rats and the changes in oxidative stress markers. Our results show a significant increase in glucose and triglycerides levels in the serum without obesity, a common pattern of the early stages of type 2 diabetes. The levels of total thiol groups (-SH) were significant increased in liver, while the levels of non-protein thiol groups were significant increased in blood and kidney. Furthermore, the levels of thiobarbituric acid reactive substances (TBARS) were significant increase in heart, liver and kidney, while the levels of oxidized dichlorofluorosceine (DCFA) were significant increased in brain and skeletal muscle. Besides, the ATPases activities were significant decreased in kidney and liver. In conclusion, our results show that the high – sucrose diet induced an early stage of type 2 diabetes in the rats, and this condition was accompanied by a significant increase in the oxidative stress markers in several tissues.

Key Words: Type 2 Diabetes, Oxidative Stress, High – Sucrose Diet

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