

The effect of N-stearoylethanolamine on the lipid composition of the rat testes and testosterone level in the early stages of streptozotocine-induced diabetes

Onopchenko O.V., Horid'ko T.M., Kosiakova H.V., Berdyshev A.G., Klimashevskiy V.M., Hula N.M.

Palladin Institute of Biochemistry, National Academy of Sciences of Ukraine, Kyiv, Ukraine

Corresponding author: Olexandra Onopchenko, onop.89.av@gmail.com

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Introduction: Diabetes is a chronic metabolic disorder with multiorgan complications and one of these is reproductive system dysfunctions. It is known that there is a correlation between disorders in the lipid composition of germ cells and the development of male infertility. N-stearoylethanolamine (NSE) is known as a modulator of the lipid content of biological membranes under different pathological conditions. So the aim of our study was to investigate the NSE effect on the testes lipid composition and testosterone level in plasma of diabetic rats.

Methods: The diabetes in rats was induced by streptozotocin (STZ, 50 mg/kg) injection. Animals with glucose levels of 8-12 mmol/l were selected for the study. Water suspension of NSE was administrated to rats at a dose of 50 mg body weight kg⁻¹ during 10 days after 1.5 months of STZ injection. The rat testes were used for lipid analysis. The phospholipid level was determined by the Vaskovskiy and Kostetskiy method. Fatty acid methyl esters and cholesterol were analyzed by gas-liquid chromatography. The level of plasma testosterone was measured by ELISA method.

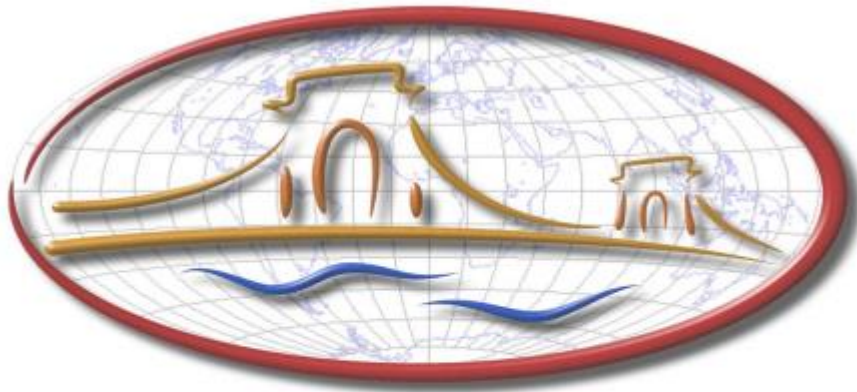
Results: NSE administration to rats with induced diabetes contributed to the normalization of total and individual phospholipid content, cholesterol esters level, free fatty acids and fatty acids of phospholipids in the rat testes. The testosterone content was likely to increase under the NSE action.

Discussion: Our results show that in the early stages of diabetes destructive changes in rat testes begin to develop which in the future may lead to a weakening of testicular functions. NSE administration to diabetic rats normalized the lipid content of rat testes and was accompanied by increase of testosterone content.

Conclusions: Thus, NSE contributes to the restoration of the structure and function of the testes in the early stages of diabetes in the rat.

Ethical approval: This study was approved by the Ethics Committee of Palladin Institute of Biochemistry of NAS of Ukraine (11 May 2018, N 7).

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