THE EFFECT OF LETROZOLE ON THE SERUM LIPID ELEVATION AGAINST THE BACKGROUND OF EXPERIMENTAL METABOLIC SYNDROME

Prof., Dr. Sci. Biol. Zagayko A.L., Lytkin D.V., Yemets M.O.
The National University of Pharmacy, Kharkiv, Ukraine

Introduction. Metabolic syndrome (MS) is a multifactorial pathological disorder associated with insulin resistance, dyslipidemia, visceral-abdominal obesity and high risk of arterial hypertension. The pathogenesis of MS is associated with a violation of many links of homeostasis, including the disbalance of sex hormones, which, in turn, regulate important metabolic processes. Aromatase is an enzyme complex, which is involved in the biosynthesis of estrogens from testosterone and androstenedione. The activity of this enzyme directly correlates with a violation of the sex hormones balance and, as a result, with the development of MS. Thus, the prospective group of drugs for MS treatment could be aromatase inhibitors, which may contribute to hyperestrogenemia correction.

Aim. The study of letrozole effect on serum lipid profile of hamsters with experimental metabolic syndrome became a focal point of our research.

Materials and methods. The study was carried out on 30 male and 30 female Syrian hamsters at the age of 2,5 months, which were divided in 3 groups by 10 animals. Experimental MS in animals was recreated using dietary model based on fructose- and fat-enriched diet for 6 weeks. The treatment of animals was carried out by oral administration of letrozole in the dose 0.3 mg/kg for 21 days. After euthanasia, trunk blood was collected and analyzed for total serum triglycerides, total cholesterol and low density lipoproteins cholesterol.

Results and discussion. In male adolescent hamsters letrozole administration was not able to significantly reduce the level of triglycerides, but it led to statistically total cholesterol and low density lipoproteins cholesterol decreasing in 11.1% and 30.4% severally. In adolescent female hamsters the level of serum triglycerides and total cholesterol were unchanged under the influence of letrozole, but the content of low density lipoproteins cholesterol was significantly decreased in 21.2% in comparison with negative control group. Current data indicate about significant decrease of serum LDL/HDL ratio and atherogenic index, part dyslipoproteinemia and dyslipidemia correction.

Conclusions. The results of our study confirm the prospect advisability of letrozole clinical using in the therapy of metabolic syndrome and obesity, especially in adult men with secondary hypogonadism and hyperestrogenemia. These results suggest the importance of further pre-clinical and clinical researches on treatment of metabolic syndrome by aromatase inhibitors and the potential possibility of using this type of treatment into clinical practice in some groups of patients.