PARACETAMOL EFFECTS ON LIVER FUNCTIONAL INDICES UNDER EXPERIMENTAL INSULIN RESISTANCE

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Introduction. Insulin resistance (IR) is the metabolic disorder that is caused by inefficient glucose uptake and utilization in peripheral tissues as a respond to insulin stimulation. This condition is characterized by hyperglycemia, dyslipidemia, peripheral tissues glucose tolerance, oxidative stress and the development of proatherogenic state. IR is the main risk factor for cardiovascular disease, diabetes mellitus type 2 (DM2) and non-alcoholic fatty liver disease (NAFLD). Nowadays acetaminophen (APAP) is one from ten most popular medical preparations in Ukraine, so it is used a lot as an antipyretic and analgesic drugs.

Aim. The aim of this study was to investigate the APAP effects on liver functional indices under experimental IR in rats.

Materials and methods. 24 male rats weighting 160-180 g, who were kept in standard vivarium conditions, were randomly divided into 4 groups. Experimental IR was induced by feeding experimental animals high-fat diet enriched with fructose during 5 weeks. APAP was injected intraperitoneally once (in dose 600 mg/kg body weight) 24 hours before the end of the experiment. In blood serum were measured alanine aminotransferase activity (ALT) and in liver reduced glutathione (GSH) and TBA-reactive substances (TBARS) content.

Results and discussion. IR development was accompanied by increased activity of serum ALT in 2.3 times compared with intact animals and proved hepatocytes injury, however, APAP injection for IR rats enhance ALT activity in 1.2 times compared with experimental pathology. So, the APAP injection enhanced the hepatocyte destruction under IR.

It was also shown that the APAP single injection in healthy animals significantly increased the content of TBARS in 1.7 times and decreased GSH in 1.5 times liver tissue. As for GSH and TBARS content under IR the same tendency was observed. However, in rats with IR APAP administration led to the significant decrease in GSH content and elevated TBARS in the liver, indicating the lipid peroxidation activation and antioxidant system attenuation.

Conclusions. Thus, we have found that APAP administration under experimental IR significantly deepened antioxidant system attenuation and deteriorate liver cells injury. The additional investigations of APAP effects can help to prevent the complications development under treatment of patients with IR.