# THE STUDY OF HEPATOPROTECTIVE EFFECT OF APPLE POLYPHENOL CONCENTRATE UNDER EXPERIMENTAL INSULIN RESISTANCE IN RATS

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**Introduction.** In the modern food industry, products with a high content of sugars, in particular fructose, are increasingly used. Over the past 50 years, the world consumption of sugar has tripled. Today, the manufacturer added it almost all conceivable food. Previously the food industry is added to foods mainly sucrose, but now it is increasingly replaced with fructose. Fructose is the sweetest sugars about 1.5 times sweeter than sucrose and 3 times than glucose, which allows manufacturers to achieve the same flavor substance fewer effects. Excessive consumption of fructose leads to insulin resistance, in which oxidative stress and the formation of free radicals develops. In consequence of that it violated the integrity of plasma membranes of liver cells.

**Aim.** The aim of the study was to study the effect of polyphenol concentrate from apples on the activity of hepatospecific enzymes alanine aminotransferase (ALT), aspartate aminotransferase (AST), gamma-glutamyl transpeptidase (GGT) in rat serum under experimental insulin resistance.

**Materials and Methods.** The studies were conducted on female rats weighing 190±15 g, kept under standard conditions in the vivarium NUPh. Insulin resistance was modeled by keeping animals on the high-fat diet enriched by fructose for 5 weeks. Polyphenol concentrate was administered from the 3rd week of the experiment intragastric for 14 days. At the end of the experiment, the rats were decapitated, blood was collected for serum. ALT, AST and GGT activity was measured in rat serum. The data obtained were processed statistically.

**Results and discussion.** The development of insulin resistance was accompanied by an increase in the activity of hepatic enzymes in the blood: ALT from 0.433±0.021 to 0.986±0.057 mkat/l, AST from 0.978±0.064 to 1.981±0.085 mkat/l, GGT from 0.284±0.019 to 0.653±0.19 mkat/l. Increased ALT and AST activity constitutes a violation of the integrity of cell membranes. Polyphenol concentrate administration to rats with experimental pathology resulted in a significant decrease of the activity of ALT, AST, GGT in 1.58, 1.65 and 1.64 times, respectively.

**Conclusions.** The results indicate that the analyzed polyphenols concentrate exhibits hepatoprotective activity and can be used for the correction of disturbances in liver insulin resistance and related pathologies.