

**THE APPLE POLYPHENOL EXTRACT EFFECT
ON SOME METABOLIC PARAMETERS ASSOCIATED
WITH LIVER DAMAGE UNDER INSULIN RESISTANCE IN RATS**

Zhadko Yu.V.

Scientific supervisor: PhD Kravchenko A.B.

National University of Pharmacy, Kharkiv, Ukraine

yulyamodest@gmail.com

Introduction. The insulin resistance (IR) development leads to the inability of target cells interact with insulin, resulting in developing diabetes mellitus type 2 (DM2) and metabolic syndrome (MS). Liver is the first organ that becomes resistant to insulin.

Aim. Study of the apple polyphenolic extract effect (PE, Pharmacognosy Department of NUPh) on some metabolic parameters associated with liver damage under IR in rats.

Materials and methods. White outbred sexually mature male rats that were used in experiment were divided into 4 groups including intact animals, IR animals injected dexamethasone 15 µg/kg intraperitoneally within 5 weeks and IR animals that from the 3rd week of the experiment were intragastrically administered PE (9 mg of polyphenols/kg bw), and healthy animals that were intragastrically administered PE. Alanine aminotransferase (ALT), aspartate aminotransferase (AST), γ-glutamyltranspeptidase (GGT) and alkaline phosphatase (ALP) activities were determined in blood serum (OOO NPP «Phyllis-Diagnosis», Ukraine).

Results and discussion. Aminotransferases activities increase is always correlates with hepatocyte damage. In our experiment ALT and AST activity increased in 2.27 and 2.03 times respectively. At the same time, GGT and ALP activity was also significantly increased. PE administration to healthy animals didn't cause significant changes in studied indices. While PE administration to IR rats led to significant lowering of enzymes activity compared with IR rats – ALT by 42.7%, AST by 34.6, but didn't reach intact level. GGT and ALP activities, which are markers of bile ducts damage, were also significantly reduced under PE administration. Such results can be explained not only by PE hypoglycemic effect (another study) but also due PE antioxidant properties. Thus, one of the IR development mechanisms is oxidative stress and dysfunction of mitochondria, leading to increased production reactive oxygen species (ROS) that contributes to the hepatocytes damage.

Conclusions. Summarizing up, PE administration ameliorated liver damage under experimental insulin resistance in rats.