ANTIOXIDANT PROPERTIES OF A NEW COMBINED AGENT GLIKVERIN IN TERMS OF CHEMICALLY INDUCED ABSOLUTE INSULIN DEFICIENCY

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Over the last years scientists proved the leading role of lipid peroxidation processes (LPP) in pathogenesis of diabetes mellitus (DM) type 2 and in development of vascular complications. This is an evidence for using of antioxidants in pathogenetic therapy of DM. New combined agent Glikverin, developed in NUPh, contains known antioxidant quercetin and α-glucosidase inhibitor voglibose. It has an antidiabetic action on experimental models of insulin resistance. Given the gradual depletion of insular apparatus at progression of DM type 2 as a result of oxidative stress and the subsequent appointment of insulin, it made sense to investigate antioxidant activity of Glikverin on model of DM type 1.

The aim of this study was to investigate the antioxidant properties of Glikverin on a model of absolute insulin resistance in rats induced by alloxan. Alloxan was injected subcutaneously once at a dose of 150 mg/kg. Glikverin (50 mg/kg of quercetin+0.02 mg/kg of voglibose) was injected in preventative and and therapeutic mode intragastrically daily for 14 days in order to model diabetes and during next 35 days. Reference agents quercetin (50 mg/kg), voglibose (0,06 mg/kg) and metformin (200 mg/kg) were administered in the same mode. The intensity of lipid peroxidation proceses was determined in homogenates of the liver by content of diene conjugates (DC) and TBA-reactancts. Antioxidant system (AOS) was evaluated in terms of reduced glutathione (GSH) and catalase activity.

The results showed that the induction of diabetes leaded towards significant increase of DC and MDA in liver homogenates of rats. In addition, in the control group we observed decrease in catalase activity and pool of GSH.

It is established that Glikverin prevented the development of oxidative stress caused by alloxan: there was significant reducing of the amount of DC and MDA-reagents in liver homogenates comparing to control group. Restoring GSH and catalase activity increase up to intact animals suggest activation of AOS. Regarding antioxidant action Glikverin was significantly superior to metformin and voglibose and was similar to reference agent quercetin.

Thus, the results show antioxidant properties of Glikverin in terms of of absolute insulin deficiency. These properties are realized by inhibition of lipid peroxidation and increased antioxidant protection.