Effectievenes of afterischemic activity of IL-2
in experimental diabetes and cerebral ischemia

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Objective: To study the effect of interleukin-2 (ronkoleukin) on the performance of thiol-disulfide system (TDS), oxidative modification of proteins (OMP) and carbohydrate-energetic metabolism in modeling alloxan diabetes (DM) and focal stroke (FS) in rats compared to cerebroprotector Thiocetam.

Materials and Methods: Experimental diabetes was modeled using a single subcutaneous injection of water solution of alloxan monohydrate (Sigma, USA) at a dose of 150 mg/kg. Clinical picture of the FS method to reproduce by B.D.Waston on the model of bilateral photoinduced thrombosis. Test drugs (Thiocetam 500 mg/kg and ronkoleukin at a dose of 0,01 mg/kg) were injected intramuscularly 1 time per day.

To study the activity of TDS in rat brain homogenates were determined levels reduced and oxidized thiols and glutathione, activity of glutathionperoxidase and glutathionreductase, as well as evaluated the processes of carbohydrate and energy metabolism (the level of ATP, ADP, AMP, pyruvate, lactate and malate) and the content of OMP in the level of aldehyde (AFG) and carboxyl (KFG) products.

Results: Determined that afterischemic damages of brain tissue in experimental animals on two models were accompanied with discordant changes of components of thiol-disulphide system (increase of levels of oxidative forms of glutation and thiols on the background of disulphide system – glutathionperoxidase and glutathionreductase) and of the pool of high-energy phosphate (decrease of levels of ATP and ADP on the background of apparent increase of AMP) and also by the increase of markers of oxidative modification of protein in homogenate of brain markers of OMP (AFG and KFG) and formation of decompensated acidosis. Was founded distinction in dynamics of changes of studied indexes on the model of experimental diabetes and focal stroke.

Proved that the course administration IL-2 contributed to the stabilization of thiol-disulfide balance, normalization of enzyme activity TDS, carbohydrate metabolism and energy metabolism, as well as indicators of OMP in the brain tissue of rats with experimental diabetes and focal stroke. Activity was studied on the models studied IL-2 for stabilizing post-ischemic brain tissue damage exceeds that in Thiocetam.

This allows us to consider IL-2 as a promising drug for the effective protection of post-ischemic brain tissue states, including in the treatment of diabetes and focal stroke.