

Effect of the rat pancreas thermostable protein complex on the number of GAD-positive and insulin-positive cells in the pancreas

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Introduction. Proteins play a leading role in the regulation of processes in the living organism defect of which cause different disorders. At present, it is particularly important to identify protein complexes involved in the regulation of cell proliferation and to use them for therapeutic purposes.

It has been shown that the adult rats pancreas contains a thermostable protein complex (TPC) similar to that of other organs. This complex inhibits cell proliferation by inhibiting the transcription process (Giorgobiani N et al. 2005). It has also been shown that TPC accelerates the cells entry into the mitotic cycle and decrease GAD-positive cells in the brain tissue (Dzidziguri et al. 2018).

GAD (glutamate decarboxylase) is an enzyme that catalyzes the production of an inhibitory neurotransmitter (GABA) from glutamate. This enzyme is expressed in the central nervous system and in the pancreatic islets, mainly β -cells. It is also a major antigen in the development of autoimmune diabetes. Damage to the beta cells of the endocrine part of the pancreas is accompanied by the secretion of GAD into the extracellular space, which in turn activates macrophages and T-cells, leading to the development of the disease (Matthias Braun et al. 2004; Simon A. Hinke. 2007).

The goal of our work was to study the effect of pancreatic TPC on the number of **GAD**-positive and **insulin**-positive cells in adolescent rats.

Material and methods. Materials - Pancreatic tissue of adult (150-170g) and adolescent (8-10g) white rats. Methods - extraction of proteins by alcohol; Tissue fixation in 4% formaldehyde solution prepared on Na / K phosphate buffer; Immunohistochemical staining with anti-GAD and anti-insulin antibodies.

Result. We injected 0.2% of pancreatic TPC solution intraperitoneally in adolescent rats (200 μ g / 100 μ L) and fix the material at three hours after injection. It has been revealed that the pancreas TPC causes GAD-positive cells to decrease by approximately 20% in the endocrine part of the pancreas. However, it does not affect the number of insulin-positive cells. The obtained results suggest that inhibition of GAD expression by TPC does not affect the process of insulin production in the same cells.

Conclusions. 1. Adult rat pancreatic TPC has ability to inhibit GAD expression in adolescent rat pancreatic β -cells.

2. The endogenous growth factor inhibitory impact does not negative affect on insulin expression.

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