The Study of Growth Inhibitory Protein Complex of Adult Rat Pancreas

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Introduction: The thermostable protein complex (TPC) from the adult white rat pancreas was obteined and partially characterized. Complex contains two protein subgroups with molecular weight 12-14 kd and 40-60 kd, that vary by electrophoretic mobility. It is shown that the pancreatic TPC through inhibition of transcription decreases cell mitotic activity in different tissues of growing rat. At the same time, it is not known: 1. whether the protein complex is involved in renewal process of pancreas tissue; 2. what is its effect on transformed cells; 3. qualitative characteristics of the active component of pancreatic TPC.

The aim of our work was the study of growth inhibitory protein complex delivered from adult rat pancreas.

Research objects and methods: Investigations were carried out on adult rats (120-150 g) and chronic lymphocytic leukemia cell lines (BCLL). The alcohol extraction of termostable protein complex from adult rat pancreas was used. The regenerative pancreas tissue after the resection (50%) was used as a model of proliferative tissue. After two days of resection pancreatic TPC was introduced in animals and the colchicines mitotic index of pancreatic tissues was determined during four days after injection. Mass-spectrometry analysis was used for qualitative characteristics of active component of TCP.

Results: Investigations have revealed that the mitotic activity of the tissue reaches a peak twice in the 3rd and 7th day after pancreas resection. Injection of pancreatic TPC after two days of resection, decreases the mitotic activity at about 50% in pancreas tissue. Pancreatic TPC has inhibitory effect on proliferative activity of chronic lymphocytic leukemia cell in culture. Mass-spectrometry analysis of low molecular sub-fraction of pancreatic TPC has revealed the presence calmodulin and calmodulin-like proteins.

Conclusions: 1. The pancreatic TPC obtained from adult white rats inhibits renewal processes of homotypic tissue. 2. The tissue specificity of the pancreatic TPC does not reveal in case of tumor cells in vitro. 3. Iinhibitory effect of pancreatic TPC on cell multiplication is due to calmodulin and calmodulin-like proteins.