**Biological Effect of Extract of Cryopreserved Piglet’s Heart Fragments in Ischemia and Spontaneous Myocardial Infarction**

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Advanced methods of traditional medicine do not always provide long-term positive results in a fighting coronary heart diseases. Therefore to date a considerable attention is paid to the investigation of the efficiency and mechanisms of the cell therapy in pathologic state of cardiovascular system.

The research aim was to determine the influence of extracts of cryopreserved newborn piglets’ heart fragments (PHE) to electrophysiological indices of cardiac muscle in animals with ischemia and spontaneous myocardial infarction (MI) on proliferative activity of heat cells. The study was performed in outbred white male mature rats aged 14 and 18 months to the start of experiment. All the animals were divided into the groups in respect of the analyzed indices of electrocardiogram (ECG). The first group made the animals with ischemia of heart muscle, introduced with physiological solution (n = 7); the second group included those with heart muscle ischemia, injected with PHE (n = 10), the third group consisted of the animals with MI, treated with physiological solution (n = 8); the fourth comprised the rats with MI, treated with PHE, accordingly (n = 24); the fifth group comprised the animals with no heart pathology, introduced with PHE (n = 12); the sixth group made the rats with no heart pathology (intact, n = 12). Proliferative activity of cells was measured by amount of Ki-67-positive cells.

The extract was derived from the cryopreserved heart fragments of newborn piglets and injected into abdominal cavity of experimental animals once daily during the whole experiment. The dose of peptides was 50 μg per 100 g per animal. Electrocardiograms (ECG) of animals were recorded with hardware-software Poly-Spectrum (Neurosoft, Russia).

The rats with myocardial ischemia showed the restoration of the R wave amplitude during 2 months after PHE injections. The elevation of ST-segment changed with appearance of the T dome-like wave, indicating a normalization of blood supply to a heart muscle. In the rats with MI to day 56 of the experiment we observed the normalization of the ECG, including the reduction of Q wave in I, II and avl leads. The indices of heart rate variability returned to the normal level. In healthy animals, injected with PHE, the amount of Ki-67-positive cells in myocardium to day 3 of the PHE injections increased from 7.9% up to 16%, and after 2 months of the injections it made 6.1%. In the rats with myocardial ischemia to day 3 of the injections with PHE the number of labeled cells increased approximately thrice and was 4.5 times higher if compared with intact animals. After 2 months of experiment the number of these cells were kept quite high as well, and was 24.6%.