THE EFFECT OF THE INTRAMUSCULAR APPLICATION OF SELECTED NEUROPEPTIDES ON THE MORPHOLOGY OF MUSCLE

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Neuropeptides (NPS) are produced in the neurons of both the central and peripheral nervous systems, where they act as neurotransmitters or neuromodulators. They also exert a number of functions within the immune system. The aim of this study was to examine a morphological picture of neuropeptide Y (NPY), substance P (SP) or vasoactive intestinal peptide (VIP) injected into the skeletal muscle of guinea pigs, to evaluate the influence of a single injection of the mentioned NPS on muscle morphology and T lymphocyte and macrophage chemotaxis. Male guinea pigs aged 5-6 months, weighing 350-400 g each, were used. 0.3 ml samples of properly diluted NPS were injected intramuscularly into the quadriceps muscle. Material was taken after 3 and 24h. As a control, quadriceps muscle from the opposite side of the body of the same animals injected with 0.9% NaCl was used. The excisions were fixed in Bouin’s and Carnoy’s solutions and paraffin embedded, and the sections were used for histology and immunohistochemistry analyses. Immunohistochemical detections of T lymphocytes and macrophages were performed.

There were different intensities and compositions of infiltrations inside the muscle after the introduction of the mentioned neuropeptides. Different strengths of muscle fiber injuries were also noted. The observed changes did not disappear, but increased after 24 h comparing to the 3h post-injection changes. The local, particularly delayed action of neuropeptides in vivo requires further studies.

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