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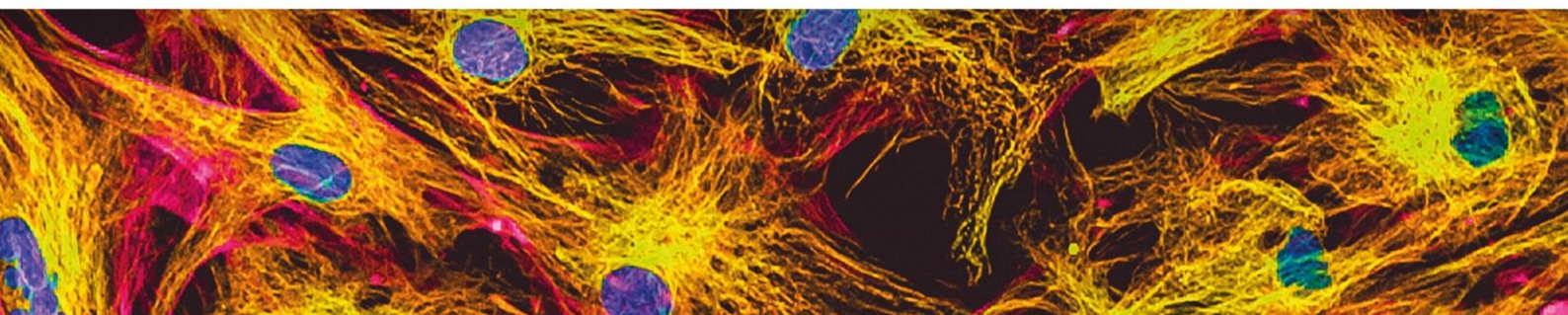
FINAL PROGRAMME AND BOOK OF ABSTRACTS



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Poster 27: Morphometric assessment the effect of mesenchymal stem cells on neuropil of cerebral hemispheres in rats with scopolamine-induced Alzheimer's type dementia

Introduction. The stem cell therapy is of particular interest, which seems to be a promising, effective, and safe therapeutic strategy for neurodegenerative diseases, including Alzheimer's type dementia (DAT) [1]. **Aim of study:** to assess morphometrically effect of mesenchymal stem cells on neuropil of cerebral hemispheres in rats with scopolamine-induced Alzheimer's type dementia. **Materials and methods.** 48 male WAG rats weighing 180–230 g were divided into 5 groups. Animals of control group (n=16) received injections of 0.9% sodium chloride solution intraperitoneally for 14 and 28 days. Animals with DAT (gr.Scop-14 (n=8), Scop-28(n=8)) were injected intraperitoneally with scopolamine buthylbromide at a dose of 1 mg/kg per rat for 14 days and 28 days [2]. Half of rats (gr.Scop-14-MSC (n=8), Scop-28-MSC (n=8)) were received intravenously mesenchymal stem cells (MSC) at a dose 500000 cells per one rat the day after last Scopite injections. Rats were removed from the experiment 14 days after the last day of all injections. Histological brain slides were stained with the Congo red (for amyloid determination), bromphenol blue (BPB) (to study oxidative modification and amount of neuropil proteins) and according to Einarson method (to evaluate the RNA content in the cytoplasm of neuropil) and examined on an Axiostar plus binocular microscope with a ProgRes C10Plus digital camera (Zeiss, Germany). **Results.** In the main groups, the the appearance of congophilia in the areas of neuropil homogenization was detected. The MSC did not have the resorptive effect on amyloid areas in neuropil. In gr. Scop-14-MSC, Scop-28-MSC the optical density (RNA count) of neuropil increased compared to gr. Scop-14, Scop-28. The R/B ratio and optical density in the RGB (red, green, blue) parts of the spectrum (using BPB) showed the level of oxidative modification and amount of neuropil proteins in the cerebral hemispheres. In gr. Scop-14-MSC, Scop-28-MSC there were a dense formation with stable optical density values at different R/B ratios (amyloid) and areas where the optical density of neuropil proteins decreased with increasing R/B ratio (as in control group). It can be interpreted as the presence of new proteins in the nerve processes. **Conclusion.** The morphological evidence of stimulation of neuropil regeneration by using mesenchymal stem cells in cerebral hemisheres was detected in rats with sopolamine-induced Alzheimer's type dementia using simple morphometric methods. **References:** 1. Kocaoglu M, et al. Brain Disord Ther. 2014;3:4. 2. Deiko RD, et al. Actual Problems of Modern Medicine.2017;17(3):13–25.

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