designed tissue engineered neural networks acting as bridges to rebuilt signal connection between the cut ends of the ruptured spinal cord. Rat bone marrow-derived mesenchymal stem cells (MSCs) with genetically enhanced expression of TrkC were induced into neuron-like cells after cocultured with Schwann cells overexpressing neurotrophin-3 in a gelatin sponge scaffold for 14 days. The formation of MSC-derived neural networks was confirmed by electron microscope and recording of spontaneous postsynaptic currents by whole-cell patch clamp. Then, this neural network scaffold was grafted acutely into rats with removal of 2-mm spinal cord tissue. Eight weeks later, MSC-derived neuron-like cells of the grafts maintained their synaptic connection or formed new connection with regenerative axons. Although biotinylated dextran amine labeled fibers of corticospinal tract only formed a few connections with MSC-derived neuron-like cells in the grafts, 5-HT labeled fibers formed much more connections. Furthermore, a part of these connections were confirmed to be synaptic connections by double-labeled immunoelectron microscope. Animals with neural networks scaffold transplantation resulted in higher BBB score and were improved cortical motor evoked potential. These findings indicate that MSC-derived neuron-like cells resulting from NT-3/TrkC-induced differentiation can partially integrate into host neural network in rat spinal cord transected.

P-7

Decreased efferents of mesencephalic raphe nuclei to striatum in animal model of streptozocin-induced diabetes

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Introduction: Diabetes mellitus is a metabolic disease which affects the brain as well as other organs. Connection of mesencephalic raphe nuclei to striatum is important, and reduction of these projections can play a negative role in regulatory connection between them...

Objectives: The main objective of this study was to determine the effects of diabetes on projections of mesencephalic raphe nuclei to striatum of rats...

Methods: Forty eight male adult Wistar rats were divided into four groups (1.control, 2. two-month diabetic rats, 3. four-month diabetic rats and 4. six-month diabetic rats). HRP was injected into the dorsal and ventral striatum separately and after perfusion with normal saline, fixation, and postfix solutions, the brains were sectioned coronaly (40 µm). Frozen sections were reacted with TMB and counterstained with 1% neutral red.

Results: This study showed reduction of labeled neurons in both mesencephalic raphe nuclei following induction of diabetes. After injection of HRP to ventral striatum this reduction was prominent in DR nucleus in comparison to median raphe projections to ventral striatum affected by diabetes more than that of those to dorsal striatum.

Conclusions: Diabetes mellitus decreases the projections of mesencephalic raphe nuclei to striatum.

Keywords: Diabetes mellitus, mesencephalon, raphe nuclei, corpus striatum, streptozocin

P-8

Could Melissa officinalis extract restore streptozotocin-induced spatial memory impairment in rats?

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Introduction: Alzheimer disease is a progressive and irreversible neuropsychiatric disorder. Melissa officinalis improves anxiety and clinical dementia symptoms caused by AD; therefore, the purpose of the present study was to evaluate the effect of Mellisa extract on spatial memorydeficit induced by STZ in MWM examination of male Wistar rats.

Methods: In the present study, 112 male Wistar rats (220-270 g) were used. Spatial learningdeficit was induced by bilateral ICV injection of STZ (3 mg/kg) via cannula; then, the Melissaextract in different doses administrated by gavage; and Morris Water Maze for measurement ofspatial learning parameters was performed.

Results: The results of this study demonstrated that gavage of the 200 mg/kg of Melissaofficinalis in combination with STZ, followed by significant reduction in two parameters: Timeand Distance.

Conclusion: Totally, the data indicate possible therapeutic value of M. officinalis extract onspatial learning improvement.

Keywords: STZ, Melissa officinalis, spatial memory

P-9

Aquaporin 4 (AQP4) is expressed in the stomach, small and large intestine of the pig

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The water channel aquaporin-4 (AQP4) is a protein widely expressed on plasma membrane of a variety of epithelial cells. In this study we investigated the expression of AQP4 in the gastrointestinal tract of the pig using immunohistochemical staining. We found no presence of AQP4 in the different