

Article 6

The role of mesenchymal stem cell therapy in ameliorating diabetes-induced ovarian damage in albino rats: a histological, biochemical and immunohistochemical studies

تاريخ القبول: 2024january

مكان النشر: Egyptian Pharmaceutical Journal

Abstract:

Background Diabetes mellitus (DM) is a chronic disease causing a variety of complications that can damage most organs, including the gonads. Diabetes was reported to be effectively treated using mesenchymal stem cells (MSCs). **Objective** The objective of the work was to demonstrate the therapeutic role of stem cells in cases of ovarian damage due to diabetes. **Materials and methods** Eighteen adult female albino rats were divided evenly into three groups. The control group received an injection of 1 ml of saline intraperitoneally (i.p.). The streptozotocin (STZ)-treated group: that was given 60 mg/kg per body weight (i.p.) of STZ to induce DM, which was slaughtered after 4 weeks. The STZ +stem cell-treated group that got STZ then was allowed to recover for 4 weeks and then underwent an intravenous injection of one million MSC before being sacrificed. Measurements of blood glucose, serum estradiol (E2), follicular stimulating hormone (FSH), and luteinizing hormone (LH) were performed. Histological examination with hematoxylin and eosin, Masson stain, and immunohistochemical investigation for proliferating cell nuclear antigen (PCNA) were performed on the ovarian sections. **Results and conclusion** The STZ-induced DM group showed high glucose, FSH, and LH levels and decreased the E2 levels. Also, the inflammation, degeneration, and decreased PCNA immune expression of the ovary development in the STZ-induced DM group were observed. The treatment with the MSCs reversed the effect of DM on glucose, FSH, LH, and E2. Additionally, the MSCs improved the pathological alterations by increasing PCNA immune expression in the ovary. It was concluded that MSCs can effectively treat diabetes-induced ovarian damage.