عنوان مقاله:

Protective effect of swimming and genistein on the expression of microRNA ۱۳۲, insulin growth factor ۱, and brain-derived neurotrophic factor genes, as well as spatial memory, in the hippocampus of diabetic ovariectomized rats

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نویسندگان:

Shirin Babri - *Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz, Iran*

Parisa Habibi - *Neurophysiology Research Center, Hamadan University of Medical Sciences, Hamadan, Iran*

Fatemeh Nouri - *Department of Pharmaceutical Biotechnology, School of Pharmacy, Hamadan University of Medical Sciences, Hamadan, Iran*

Mehdi Khazaei - *Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran*

Sepehr Nayebi Rad - *Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran*

Gonja Javani - *Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz, Iran*

خلاصه مقاله:

Background and Objective: The present study aimed to assess the effects of the combined use of exercise and genistein on the hippocampal expression of microRNA-۱۳۲, IGF-۱, and BDNF in type ۲ diabetic ovariectomized rats. Materials and Methods: Wistar female rats in the weight range of ۱۸۰-۲۲۰ gr (n=۱۰) were assigned to six groups: sham, ovariectomy, ovariectomized diabetic, ovariectomized diabetic treated with genistein for eight weeks, diabetic ovariectomized treated with swimming for eight weeks, and a group that was treated with both genistein and swimming for eight weeks. The effect of those treatments was assessed by the determination of microRNA-۱۳۲, insulin growth factor ۱ (IGF-۱), and brain-derived neurotrophic factor (BDNF) expression levels within the hippocampus. These genes were evaluated by real-time-polymerase chain reaction (RT-PCR) and spatial memory was assessed by the Morris water maze. Results: Ovariectomy demonstrated a decrease in the expression of microRNA-۱۳۲, IGF-۱, and BDNF in the hippocampus, as well as spatial memory, in diabetic ovariectomized rats, which showed a greater reduction in the expression of those genes in rats (P<۰.۰۵). Nevertheless, genistein administration, swimming training, and a combination of them significantly up-regulated microRNA-۱۳۲, BDNF, and IGF-۱ expression, as well as spatial memory (P<۰.۰۵). Conclusions: As evidenced by the obtained results, the combined use of genistein and swimming could prevent estrogen deficiency effects in the hippocampus of ovariectomized diabetic rats

کلمات کلیدی:

Diabetes, Genistein, Ovariectomy, Spatial Memory, Swimming