Evaluation of the synergistic effects of resistance training and saffron supplementation on reducing amyloid beta accumulation and improving cognitive function in a rat Alzheimer's model

Abstract

Introduction and Objective: Alzheimer's disease is a major challenge for the scientific and medical community. This progressive disease is associated with weakening brain function and leads to disorders in thinking and memory, while no specific and definitive treatment has been provided for it so far. So far, many studies have been conducted to find solutions to improve the condition and reduce the effects of this disease. This article investigates the combined effect of resistance training and saffron extract consumption on spatial memory and the amount of amyloid beta accumulation in the hippocampal tissue of animal models of Alzheimer's disease.

Methods: In this experimental study, 32 adult male Alzheimer's rats were randomly divided into four groups including control, resistance training, combination of resistance training and extract, and extract alone. To create an Alzheimer's model, amyloid beta 42-1 was injected into the hippocampus. The resistance training program was performed for 12 weeks with 5 weekly sessions. The radial maze test was used to measure spatial memory. The amount of amyloid beta protein was calculated using the ELISA technique and data analysis was performed using one-way analysis of variance.

Findings: The findings indicate that after 12 weeks of resistance training with saffron extract, spatial memory performance in the intervention groups was significantly improved compared to the control group ($P < 0.05$). In addition, the amount of amyloid beta accumulation in the groups that received resistance training, resistance training with saffron extract, and saffron extract alone was significantly reduced compared to the control group ($P < 0.05$).

Conclusion: It seems that the combination of resistance training with saffron extract can improve spatial memory performance and reduce amyloid beta accumulation in the hippocampal tissue of male mice with Alzheimer's disease.

Keywords: Resistance training, saffron, Alzheimer's, spatial memory, amyloid beta