

عنوان مقاله:

The effect of high intensity interval training with beetroot (*Beta vulgaris*) juice supplementation on serotonin and dopamine receptors expression, anxiety and depression in middle-aged diabetic rats

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خلاصه مقاله:

Objective: The aim of this study was to evaluate the effect of four weeks of high intensity interval training (HIIT) with beetroot juice supplementation (BJ) on serotonin and dopamine receptors in hippocampal tissue, as well as anxiety and depression in middle-aged diabetic rats. **Materials and Methods:** In this experimental study, 28 diabetic female rats (55 mg/kg, induced by streptozotocin) aged 12-14 months, weighing 280-320 g, were divided into (1) diabetic control (DC), (2) BJ, (3) HIIT, and (4) HIIT+BJ groups. Also, 7 healthy rats were included in the healthy control (HC) group to evaluate the effect of diabetes induction on the research variables. HIIT was performed for four weeks, 4 sessions per week (70-95% of maximum speed at high intensities; 50-60% of maximum speed at low intensities). Also, BJ was fed daily to rats at a dose of 10 ml/kg. **Results:** Hippocampal expression of dopamine receptor-1 (Dop.R), 5-hydroxytryptamine receptor (5-HT. R), open arm entry percentage (OAE%) and movement rate in the HIIT, BJ and HIIT+BJ groups were significantly higher than the DC group. In the HIIT+BJ group, open arm time percentage (OAT%) was higher than the DC group. Levels of Dop.R gene expression were more affected by HIIT, and levels of 5-HT. R were more affected by BJ supplementation; also, HIIT+BJ had a synergistic effect on reducing anxiety and depression. **Conclusion:** Although HIIT was more effective than BJ and HIIT+BJ on Dop.R and BJ supplementation on 5-HT.R and improved anxiety and depression, both of HIIT and BJ were complementary in improving dopamine and serotonin receptor-dependent anxiety and depression and enhanced each other's effects.

کلمات کلیدی:

HIIT, *Beta vulgaris*, Serotonin receptor, Dopamine receptor, Aging, Diabetes

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