



Differential effect of type of exercise on biomarkers that are involved in neurogenesis in the hippocampus of adult male rats

Oral Presentation

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Abstract

Introduction: Exercise (especially aerobic exercise) stimulates neurobiological mechanisms in the brain tissue [1, 2]. It has been shown that long-term running [3], especially voluntary running, can significantly increase neuronal and synaptic activity in the rat hippocampus, leading to morphological changes. This study evaluated the effects of different intensities, durations, and modes of running on the expression of genes contributing to neuronal differentiation and synapse formation in the hippocampus of adult male rats.

Methods: Adult male Wistar rats (n=24) were randomly divided into control, low-intensity running (LIR), high-intensity running (HIR), and the voluntary wheel running (WR) conditions. Changes in the expression of microRNA-124 (miR-124) and its respective targets were analyzed using quantitative RT-PCR.

Results: WR compared to treadmill running increased miR-124 expression, while reducing the expression of its respective targets, glucocorticoid receptor (GR) and SRY-Box 9 (SOX9). Differences in expression levels were statistically significant ($p < 0.05$), except for the expression of GR.

Conclusion: These findings showed a more significant effect of voluntary running on the spread of neurogenesis in male rats' hippocampus than forced treadmill running. Also, more beneficial effects were observed in the lower intensity treadmill group compared to the high-intensity treadmill group.

Keywords

Hippocampus; Neurogenesis; Rat; running

Reference:

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