عنوان مقاله:

The Effects of Different Dose of Chronic Ritalin on the Brain of Prepubertal Female Balb/C Mice

محل انتشار:

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نویسندگان:

Amirreza Katebi - *Alame Tabatabaee University, Faculty of Psychology and Educational Sciences, Department of Psychology, Tehran, Iran.*

Fereshteh Golab - *Cellular and Molecular Research Center, Iran University of Medical Sciences, Tehran, Iran.*

Gelareh Vahabzadeh - *Department of Pharmacology, School of Medicine, Iran University of Medical Sciences, Tehran, Iran.*

Arash Sarveazad - *Colorectal Research Center, Iran University of Medical Sciences, Tehran, Iran.*

خلاصه مقاله:

Background Methylphenidate (MPH) is commonly prescribed for children who have been diagnosed with attention deficit hyperactivity disorder (ADHD); however, the action mechanisms of methylphenidate have not been fully elucidated. Studies have shown a relationship between apoptosis signaling pathways and psychiatric disorders, as well as therapeutic targets for such disorders. So, we examined the effects of chronic methylphenidate administration on the brain of mice. Materials and Methods Animals were administered MPH at doses of 2, 5 and 10 mg/kg for 60 days. At the age of three months and in estrous phase, brian tissues were removed and washed in cold phosphate-buffered saline and some of them were frozen at -80oC for Western blot analysis. We measured the levels of pro-apoptotic protein, Bax and anti-apoptoticprotein, Bcl-2, in the brain of neonate female Balb/c mice. The rest of the brains were fixed in formalin (10% phosphate-buffered, pH = 7.4). Then samples were embedded in paraffin according to routine histologic procedures. Results: Our results showed that MPH with a dose of 10 mg/kg causes a considerable increase in the level of the Bax protein as compared with other groups. In contrast, in the partial cortex of female mice under treatment with high dose of MPH (10 mg/kg) could less Bcl2 levels as compared with 5 mg/kg MPH. However, 5 mg/kg MPH have a significant effect on Bcl2 levels compare with each of mentioned doses ($P<0.05$). Conclusion Our results suggest that long-term administration of MPH in the mouse brain had influence on the cascade of apoptosis and its effects, depends on dose rate.

کلمات کلیدی:

Apoptosis, Brain, Mice, Methylphenidate, Ritalin