

## Ritalin, Quillivant, Metadate, Concerta, Daytrana, Methylin and Focalin are all Methylphenidate!

### Methylphenidate induces lipid and protein damage in the prefrontal cortex of the brain.

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#### Abstract

The use of psychostimulant methylphenidate has increased in recent years for the treatment of attention-deficit hyperactivity disorder in children and adolescents. However, the behavioral and neurochemical changes promoted by its use are not yet fully understood, particularly when used for a prolonged period during stages of brain development. Thus, the aim of this study was to determine some parameters of oxidative stress in encephalic structures of juvenile rats subjected to chronic methylphenidate treatment. Wistar rats received intraperitoneal injections of methylphenidate (2.0 mg/kg) once a day, from the 15th to the 45th day of age or an equivalent volume of 0.9% saline solution (controls). Two hours after the last injection, animals were euthanized and the encephalic structures obtained for determination of oxidative stress parameters. Results showed that methylphenidate administration increased the activities of superoxide dismutase and catalase, but did not alter the levels of reactive species, thiobarbituric acid reactive substances levels and sulfhydryl group in cerebellum of rats. In striatum and hippocampus, the methylphenidate-treated rats presented a decrease in the levels of reactive species and thiobarbituric acid reactive substances, but did not present changes in the sulfhydryl groups levels. **In prefrontal cortex, methylphenidate promoted an increase in reactive species formation, SOD/CAT ratio, and increased the lipid peroxidation and protein damage.** These findings suggest that the encephalic structures respond differently to methylphenidate treatment, at least, when administered chronically to young rats. Notably, the prefrontal cortex of juvenile rats showed greater sensitivity to oxidative effects promoted by methylphenidate in relation to other encephalic structures analyzed.

Fifteen percent of all school-age boys have been diagnosed with ADHD and 7 percent of all school-age girls. That makes a total of 11 percent of all school-aged children in the U.S. diagnosed with ADHD.

The CDC survey completed last year found an estimated 6.4 million children ages 4 to 17 had been diagnosed at some point, a 53 percent increase over the past decade. Approximately two-thirds of those currently diagnosed have been prescribed drugs such as Ritalin or Adderall.