

Long term effects of Ritalin: Depression and Frontal Lobe Damage

San Juan, Puerto Rico, December 12, 2004 – A new study conducted in rats by the National Institutes of Health (NIH) and McLean Hospital/Harvard Medical School suggests that the misdiagnosis of attention-deficit hyperactivity disorder (ADHD) combined with prescription drug use in children may lead to a higher risk of developing depressive symptoms in adulthood.

This work, released at the annual American College of Neuropsychopharmacology (ACNP) conference in Puerto Rico, is among the first to examine the effects of early Ritalin exposure in rats on behavior and brain function during the later periods of life.

"Attention-deficit hyperactivity disorder can be a serious medical problem for children and their parents," says lead researcher William Carlezon, Ph.D., director of McLean Hospital's Behavioral Genetics Laboratory and associate professor of psychiatry at Harvard Medical School. "While Ritalin is an effective medication that improves the quality of life for many children with ADHD, accurately diagnosing and identifying the correct treatment regimen for the disorder is essential, especially when considering health effects that can last through adulthood."

Ritalin is a generic medication prescribed for children with attention-deficit hyperactivity disorder (ADHD), a condition that consists of a persistent pattern of abnormally high level of activity, impulsivity, and/or inattention. Usually diagnosed in children of preschool or elementary school age, ADHD has been estimated to affect 3 to 12 percent of children and is twice as common among boys. Children with ADHD are also likely to have other disorders, such as a learning disability, oppositional defiant disorder, conduct disorder, depression, or anxiety.

In the work funded by the NIH, Dr. Carlezon and his chief collaborator, Dr. Susan Andersen, examined the effects of exposing rats to Ritalin during early development on behaviors later in life. They exposed normal rats to twice-daily doses of Ritalin during a period that is equivalent to approximately 4-12 years of age in humans. Examining the behavior during adulthood, Carlezon and Andersen conducted several types of tests that all showed that the animals had a reduced ability to experience pleasure and reward, particularly when it was measured by sensitivity to cocaine. In addition, they found that the animals exposed to Ritalin during pre-adolescence were more prone to express despair-like behaviors in stressful situations (such as swim tests) as adults. Overall, the animals showed more evidence of dysfunctional brain reward systems and depressive-like behaviors in adulthood.

These findings are critical because they suggest that Ritalin can have long-term consequences on normal-functioning brains. The study is particularly relevant when considering the difficulty in correctly diagnosing children with ADHD. In 1999, approximately 90 percent of children diagnosed with the disorder were taking Ritalin, with children beginning drug therapy at younger ages today, even during preschool in some instances. There is increasing evidence to suggest that correct diagnosis of ADHD is of the highest importance – children who are misidentified as having ADHD and subsequently placed on prescription drug therapy could face possible impaired brain performance as adults.