# Nonprescription use of Ritalin may cause structural changes in brain, study finds

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As nonprescription use of Ritalin increases among young adults, researchers at the University at Buffalo Clinical and Research Institute on Addictions warn that such use may cause irreversible structural changes in certain areas of the brain.

Panayotis (Peter) Thanos, Ph.D., senior research scientist in the Department of Pharmacology and Toxicology, Jacobs School of Medicine and Biomedical Sciences, conducted a study using animals models to see what the effects of methylphenidate (brand name: Ritalin) might be for those without symptoms of attention deficit hyperactivity disorder (ADHD).

Many college and even high school students without ADHD will use Ritalin as a stimulant in order to feel more focused, receive a "high" or lose weight.

"We found that chronic use of this drug by those without ADHD-like symptoms resulted in neuroinflammation in regions of the brain which are related to motivated behavior," Thanos says. "One month after use was stopped, the inflammation and structural changes were still there. This could result in long-term risks for young adults, as these areas of the brain also influence addiction and the ability to respond to changes in the environment."

Because illicit use of Ritalin is more common among young people, when the brain is still developing, there is cause for concern, Thanos says.

"Although Ritalin can be very effective in the treatment of ADHD, it is not without risk for those without ADHD to take it chronically. Here again, the important thing to remember is to take only with a prescription and as directed by a doctor," he says.

Thanos' study appears in the current issue of *Journal of Neural Transmission*.

Provided by University at Buffalo