

# THC exposure as adolescents linked to negative effects of THC as adults

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In earlier studies, researchers at Louisiana State University had found that estrogen - or more precisely, having ovaries - made adult rats exposed for the first time to THC, the primary ingredient in marijuana and hashish, less sensitive to THC's negative effects on tests of learning and memory.

A new study, reported at the [Experimental Biology](#) 2009 meeting in New Orleans, finds that when rats are first exposed to THC during the equivalent of adolescence, however, [estrogen](#) loses its protective effect. When these rats were again exposed to THC as adults, they performed more poorly on tests of [learning](#) and memory - diminished response time, increase in errors -- than did similar rats that had not been exposed to THC when younger.

Dr. Peter Winsauer says these results indicate that the effects of THC and estrogen are different, depending on age, and, even more important, that THC use during adolescence, a critical period of development, has lasting effects on cognitive processes such as learning and memory. He believes that illicit use of THC during adolescence produces persistent changes in the brain that sensitize females to the negative effects of THC later in life.

Jessie Sutton, a research associate in the laboratory of Dr. Peter Winsauer, presented the findings April 19 at Experimental Biology 2009 as part of the scientific program of the American Society for Pharmacology and Experimental Therapeutics.

When a group of 12 female rats were 35 days old, an age equivalent to that of human teenagers about to undergo puberty, they began to be exposed to THC chronically for 40 days. Half had had their ovaries removed when they were 30 days old, half retained their ovaries. The day after the 12 females finished the period of exposure, they underwent an extensive training process consisting of pressing colored keys in a specific sequence in order to obtain food pellets. Then, as adults, they were challenged with different dosages of THC and tested with a learning task.

Also being trained in the learning and [memory](#) tasks was another group of 12 female rats, half with ovaries, half not, which had never been exposed to THC as [adolescents](#).

All rats given THC did worse on tests than did similar animals receiving saline, and all showed a dose-dependent reaction: the more THC, the worse they performed. However, the rats that had been exposed to THC earlier in life performed significantly worse at the varying doses of THC than did the rats for which the adult exposure to THC was their first. This was true whether the animals had ovaries or not. Because of their earlier THC exposure, having ovaries did not bestow any benefit when exposed to THC as adults.

Source: Federation of American Societies for Experimental Biology  
([news](#) : [web](#))

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