

MDPV abuse in adolescence increases cocaine addiction vulnerability in adulthood

March 23 2017

Consumption of the synthetic drug MDPV in adolescence can increase vulnerability of cocaine addiction during adulthood, according to a study carried out with laboratory animals and led by researchers Elena Escubedo and Olga Valverde.

A new designer drug with effects similar to those of cocaine

Designer drugs are a new generation of [addictive substances](#) popular among young people. Methylenedioxypropylamphetamine (MDPV) is a high-abuse amphetamine derivative with greater psychostimulant effects than those of [cocaine](#). The effects of this drug, which inhibits the reuptake of neurotransmitters dopamine and noradrenaline, are largely unstudied.

The new study analyses the influence of MDPV consumption during adolescence and its impact on adults' vulnerability to cocaine use. The researchers cite the similarity of MDPV and cocaine action mechanisms, and the practically permanent effects created by these addictive substances in certain brain areas, mostly in the nucleus accumbens, and pattern response alterations in response to specific stimuli.

In the research, adolescent mice were treated with MDPV over seven days. After three weeks without the substance, adult animals' sensitivity to cocaine was analyzed under different experimental protocols. At the

same time, the changes in certain proteins associated with the addictive process were also analyzed.

"In the new study, we state that the animals treated with MDPV during adolescence show reinforcing behavior patterns to cocaine which are higher than the control group. Also, these behavioural changes are connected to alterations of factor expression directly related to addiction. For instance, the level of the factor DeltaFosB is three times higher than the normal level and it stays high during the three weeks after removing the addictive substances from the animals," says Professor Elena Escubedo, also member of the Research Group Neuropsicofarmacologia dels Derivats Amfetamínics (Neuropsychopharmacology of Amphetamine Derivatives) of the UB.

DeltaFosB, in particular, is a transcription factor involved in neuroplasticity expressed in addictions. "Since this factor is understood as a molecular 'power switch' for [cocaine addiction](#), we think this is the essential molecule to explain a great part of this phenomenon," says Escubedo.

According to Professor Olga Valverde, from the Department of Experimental and Health Sciences of the Pompeu Fabra University, "Although [drug](#) use can lead to [addiction](#) at any age, the new research shows that the sooner someone starts taking drugs, the more likely s/he will develop future severe problems. Therefore, efforts have to be focused on the study of consequences of exposure to the main abusive drugs during adolescence."

Provided by University of Barcelona

Citation: MDPV abuse in adolescence increases cocaine addiction vulnerability in adulthood (2017, March 23) retrieved 24 April 2024 from <https://medicalxpress.com/news/2017-03-mdpv->

[abuse-adolescence-cocaine-addiction.html](#)

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.