

Easily led 'ash-tray': Adolescent smokers prone to drug abuse

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It is common knowledge that smoking is a health risk but why do teens become addicted to smoking more easily than adults? In an evaluation for Faculty of 1000 Biology, Neil Grunberg looks into why adolescents are more prone to substance abuse.

Grunberg describes the study, published by Natividad et al. in *Synapse* journal, as "fascinating" and suggests it "may have implications to help understand why [adolescents](#) are particularly prone to drug abuse".

[Nicotine](#) increases the level of dopamine in the brain, a neurotransmitter that is responsible for feelings of pleasure and wellbeing. The study looked at dopamine levels in adolescent and adult rats after nicotine withdrawal. The authors found that the withdrawal signs (physical and neurochemical) seen in adolescent rats were fewer than those observed in adults.

The study provides previously unknown mechanisms as to why there are differences in nicotine withdrawal between adolescent and adult rats. The key here, as stated by Grunberg, is "age alters [neurological] systems and interactions relevant to nicotine".

The reason that adolescents are prone to [drug abuse](#) (in this case, nicotine) is that they have increased sensitivity to its rewarding effects and do not display the same negative withdrawal effects as adults do, due to an underdeveloped dopamine-producing system.

Since rats are not subject to cultural influences, "rat studies of nicotine ... have provided valuable insights that have led to practical behavioural and pharmacological interventions", says Grunberg.

The results of this study may not stop at nicotine. Grunberg continues, "these findings might also be relevant to other addictive and abuse drugs".

More information: The full text of this article is available free for 90 days at www.f1000biology.com/article/d...jsqzb3f1/id/1166360

An abstract of the original article Nicotine withdrawal produces a decrease in extracellular levels of dopamine in the nucleus accumbens that is lower in adolescent versus adult male rats is at www.ncbi.nlm.nih.gov/sites/entrez/19771590

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