

Binge-drinking teens may be risking future depression

November 15 2010

Binge-drinking teenagers may be putting themselves at higher risk in adulthood for mood disorders such as anxiety and depression, Loyola University Health System researchers report.

A new Loyola study has found that exposing adolescent rats to binge amounts of alcohol permanently altered the system that produces hormones in response to stress. This disruption in [stress hormones](#) "might lead to behavioral and/or mood disorders in adulthood," researchers reported.

Senior author Toni Pak, PhD, and colleagues reported their findings Nov. 15 at the annual meeting of the Society for Neuroscience in San Diego.

While results from animal studies don't directly translate to people, the findings do suggest a mechanism by which teenage binge drinking could cause [mental health problems](#) in adulthood, Pak said.

"Exposing young people to alcohol could permanently disrupt normal connections in the [brain](#) that need to be made to ensure healthy adult [brain function](#)," Pak said.

Binge drinking is defined as a woman having at least four drinks or a man having at least five drinks on one occasion. Heavy binge drinkers can consume 10 to 15 drinks. Binge drinking typically begins around age 13 and peaks between 18 and 22, before gradually decreasing. Thirty-six

percent of youths ages 18 to 20 reported at least one binge-drinking episode during the past 30 days, according to the Substance Abuse and [Mental Health Services](#) Administration.

The Loyola study examined the long-term effects of alcohol on the production of the stress hormone corticosterone in rats. (The equivalent stress hormone in humans is cortisol).

Humans and rats produce stress hormones in response to physical or psychological stress. For example, in a "fight-or-flight" situation, a jolt of cortisol provides a burst of energy and a lower sensitivity to pain, while suppressing functions that aren't immediately needed, such as digestion. However, chronic exposure to cortisol and other stress hormones has been linked to depression, cardiovascular disease and other problems.

In the study, researchers exposed adolescent rats to an 8-day [binge drinking](#) pattern: three days of alcohol binging, two days off, then three more days of binging. On binge days, rats were injected with enough alcohol to raise their blood alcohol concentration to between 0.15 percent and 0.2 percent. (In humans such concentrations would be roughly 2 to 2.5 times higher than the 0.08 legal limit for driving.) A control group of rats received injections of saline.

One month later, when the rats were young adults, they were exposed to one of three regimens: saline injections, a one-time alcohol injection or a binge-pattern of alcohol exposure. Alcohol is a form of stress, so not surprisingly, the animals that had either a one-time or binge alcohol exposure produced more of the corticosterone stress hormone. A more significant finding is that among rats that had received alcohol during adolescence, there was a significantly larger spike in corticosterone when they received alcohol during adulthood. These rats also had a lower base level of [corticosterone](#) than rats that had remained sober during

adolescence. These findings suggest that alcohol exposure during puberty permanently alters the system by which the brain triggers the body to produce stress hormones.

Provided by Loyola University

Citation: Binge-drinking teens may be risking future depression (2010, November 15) retrieved 9 April 2024 from <https://medicalxpress.com/news/2010-11-binge-drinking-teens-future-depression.html>

<p>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.</p>
--