

Taste of beer, without effect from alcohol, triggers dopamine release in the brain

15 April 2013



Image: John White

The taste of beer, without any effect from alcohol itself, can trigger dopamine release in the brain, which is associated with drinking and other drugs of abuse, according to Indiana University School of Medicine researchers.

Using positron [emission tomography](#) (PET), the researchers tested 49 men with two scans, one in which they tasted beer, and the second in which they tasted Gatorade, looking for evidence of increased levels of dopamine, a brain neurotransmitter long associated with alcohol and other drugs of abuse. The scans showed significantly more dopamine activity following the taste of beer than the sports drink. Moreover, the effect was significantly greater among participants with a family history of alcoholism.

Results of the study were published online Monday by the journal *Neuropsychopharmacology*.

"We believe this is the first experiment in humans to show that the taste of an [alcoholic drink](#) alone, without any intoxicating effect from the alcohol, can elicit this dopamine activity in the brain's reward centers," said David A. Kareken, Ph.D., professor of neurology at the IU School of Medicine and the deputy director of the Indiana Alcohol Research Center.

The stronger effect in participants with close alcoholic relatives suggests that the release of dopamine in response to such alcohol-related cues may be an inherited risk factor for alcoholism, said Dr. Kareken.

Research for several decades has linked dopamine to the consumption of various drugs of abuse, although researchers have differing interpretations of the neurotransmitter's role. [Sensory cues](#) that are closely associated with drug intoxication (ranging from tastes and smells to the sight of a tavern) have long been known to spark cravings and induce treatment relapse in [recovering alcoholics](#). Many neuroscientists believe that dopamine plays a critical role in such cravings.

The [study participants](#) received a very small amount of their preferred beer—15 milliliters—over a 15-minute time period, enabling them to taste the beer without resulting in any detectable blood [alcohol](#) level or intoxicating effect.

Using a PET scanning compound that targets dopamine receptors in the brain, the researchers were able to assess changes in dopamine levels occurring after the participants tasted the liquids.

In addition to the PET scan results, participants reported an increased beer craving after tasting beer, without similar responses after tasting the sports drink—even though many thought the Gatorade actually tasted better, said Brandon G. Oberlin, Ph.D., post-doctoral fellow and first author of the paper.

Provided by Indiana University

APA citation: Taste of beer, without effect from alcohol, triggers dopamine release in the brain (2013, April 15) retrieved 18 October 2021 from <https://medicalxpress.com/news/2013-04-beer-effect-alcohol-triggers-dopamine.html>

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