

The attached study discusses how not only do we have cues to use but we also have cues not to use. While scientists research how to mimic that with a pill, perhaps we can experiment with it.

What thought or activity that I normally engage in is a cue not to use? Can I engage in this when I feel an urge? For example, how about taking a shower? Something else?

Science News

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Brain cells that suppress drug cravings may be the secret to better addiction medicines

Date: September 9, 2019

Source: Scripps Research Institute

Summary: Scientists have shed light on poorly understood brain mechanisms that suppress drug and alcohol cravings, uncovering new insights that may help in the development of better addiction medicines.

FULL STORY

For the nearly 20 million U.S. adults who are addicted to drugs or alcohol, no effective medical treatment exists -- despite plentiful scientific knowledge surrounding the factors that trigger relapse.

It's a quandary that prompted a research quest for Nobuyoshi Suto, PhD, of Scripps Research's Department of Neuroscience.

Rather than continue to dig for clues on what drives relapse among those who struggle with compulsive drug use, Suto and his team decided to take a different approach: They explored how the brain responds to environmental cues that suppress -- not promote -- drug cravings, specifically for alcohol and cocaine, two of the largest classes of abused drugs.

By shedding new light on these poorly understood brain mechanisms, their findings may contribute to better medicines to treat addiction, Suto says. The research, supported by grants from NIH's National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism, appears in *Nature Communications*.

"Medications designed to counter brain processes that lead to relapse have seen limited success in patients, as have non-drug interventions such as cue-exposure therapy that seeks to help individuals deal with addiction triggers," Suto says. "We believed an alternate strategy would be beneficial, so we sought to explore what happens in the brain in the absence of triggers, when cravings are not driving behavior."

The study examined how nerve cells behaved in the brain's infralimbic cortex. This brain region is believed to be responsible for impulse control.

For their experiments, the scientists worked with male rats that were conditioned to be compulsive users of alcohol or cocaine. Suto and his team wanted to find out what happens in the brain when the rats received environmental cues (a citrus scent, in the case of this study) that drugs were not available. Those signals, known as "omission cues," were successful at suppressing all of the main factors that promote drug relapse.

The team then dug deeper into the underlying "anti-relapse" brain mechanisms, using a laboratory technique that would remove any ambiguity about what role the neurons play in shaping behavior.

"Our results conclusively establish that certain neurons that respond to omission cues act together as an ensemble to suppress drug relapse," Suto says.

Additional research will build on these findings.

"A medical breakthrough is needed in addiction treatment," Suto adds. "Our hope is that further studies of such neural ensembles -- as well as the brain chemicals, genes and proteins unique to these ensembles -- may improve addiction medicine by identifying new druggable targets for relapse prevention."

This work was supported by the Extramural and Intramural funding from National Institute on Drug Abuse as well as National Institute of Alcohol Abuse and Alcoholism, National Institute of Health, R21DA033533 (N.S.), R01DA037294 (N.S.), R01AA023183 (N.S.), R01AA021549 (F.W.), ZIADA000467 (B.T.H.), N01DA59909 (G.I.E.). A.L. and H.N. were supported by Ruth L. Kirschstein Institutional National Research Service Award from National Institute of Alcohol Abuse and Alcoholism, National Institute of Health, USA: T32AA007456 (PIs, Drs. Loren "Larry" Parsons and Michael Taffe).

Story Source:

Materials provided by **Scripps Research Institute**. *Note: Content may be edited for style and length.*

Journal Reference:

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