Biochemical pathway may link addiction, compulsive eating

September 1 2010

Ezlopitant, a compound known to suppress craving for alcohol in humans, was shown to decrease consumption of sweetened water by rodents in a study by researchers at the Ernest Gallo Clinic and Research Center, which is affiliated with the University of California, San Francisco.

"This finding suggests a possible link between the neurochemical pathways for addiction and compulsive eating," says principal investigator Selena Bartlett, PhD, Director of the Pre-Clinical Development Group at the Gallo Center.

The study will be published online in PLoS One on September 1, 2010.

Ezlopitant is an NK1 receptor-antagonist, a class of drugs that blocks the action of substance P, a neurotransmitter that is believed to play a role in the reward system. The reward system is a complex of brain structures that, among other things, governs craving for, and addiction to, alcohol and drugs.

"Substance P is released in your brain in response to certain stimuli, and needs to bind with receptors on neurons in order to have an effect," Bartlett explains. "The NK1 receptor is where it binds, and ezlopitant prevents that binding."

In the study, rats given ezlopitant showed significantly decreased motivation to consume water sweetened with sugar, water sweetened

with saccharin, and an alcohol solution.

Bartlett believes one possible explanation is that the NK1 receptor is part of the same reward system that links compulsive craving for sweets with craving for drugs and alcohol.

"In other studies, NK1-receptor antagonists have been shown to decrease craving for alcohol in humans with alcohol-use disorder," she says. "In our study, the decrease in the rats' consumption of sweetened water was, in fact, even greater than their decrease in alcohol consumption. For the first time, we've shown that this receptor might be a target for compulsive eating. We're looking at a potentially promising new approach to addressing pathological food addiction.

Bartlett notes that her laboratory is focused on the development of medications for human use, so, "naturally," she says, "we'd like to see this experiment replicated in humans as soon as possible."

More information: PLoS One paper: dx.plos.org/10.1371/journal.pone.0012527

Provided by University of California - San Francisco