

Animal study reveals bittersweet brain chemical clue that may help women stop binge drinking

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Credit: Michael Discenza/Unsplash

Dr. Leigh Walker led a study that showed that when a certain chemical is

removed from the brain, males drink more and females drink less. But when the alcoholic drinks are sweetened, female consumption goes up.

Dr. Walker, an expert in the neurobiology of anxiety and [alcohol](#) use disorders, said the findings could pave the way for treatments designed to help women stop binge drinking.

"The taste of alcohol is an important and often overlooked factor that drives alcohol preference, intake and use," Dr. Walker said.

"We have identified a chemical in the brain that makes alcohol taste bitter to females, unless the drink is sweetened."

Dr. Walker said science has primarily focused on examining how male brains work. Her study, published in [Neuropsychopharmacology](#), looked at how female brains might differ from male brains and identified differences in response to taste. The research centered on "CART," a neuropeptide present in all species and associated with [energy balance](#), depression, anxiety, and reward-related behavior, including those around drinking alcohol.

Dr. Walker, working closely with graduate researcher Xavier Maddern and other Florey researchers, studied the effect of inhibiting CART in mice that were trained to drink alcohol.

"Alcohol has an underlying bitter taste," Dr. Walker said. "When we inhibited CART in male mice their drinking increased. And when we knocked out the same brain chemical in female mice, they drank less. But when the alcohol was sweetened, the female mice drank more. This tells us that without CART, alcohol is unpalatable to females."

Alcohol use contributes to about 3 million global deaths each year with alcohol misuse accounting for 5.1% of the global disease burden, while

rates of risky drinking and alcohol use disorders [are rising in women much faster than in men](#).

"If we can find a way in future research to target the CART neuropeptide system, we may be able to create treatments to help women curb excessive alcohol use. And if we can work out how male and female brains differ it will open unprecedented opportunity to treat disorders of the [brain](#) in women, including [alcohol use](#) disorders," Dr. Walker said.

More information: Xavier J. Maddern et al, Cocaine and amphetamine regulated transcript (CART) mediates sex differences in binge drinking through central taste circuits, *Neuropsychopharmacology* (2023). [DOI: 10.1038/s41386-023-01712-2](https://doi.org/10.1038/s41386-023-01712-2)

Provided by Florey Institute of Neuroscience and Mental Health

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