FDA-approved drug shows promise as alcoholism treatment

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(PhysOrg.com) -- A medication commonly prescribed as a muscle relaxant shows promise as a potential treatment for alcoholism, based on a study in rats by researchers at the Ernest Gallo Clinic and Research Center and the University of California, San Francisco.

Chlorzoxazone, an FDA-approved drug, significantly decreased alcohol consumption in a rat model of heavy drinking, said lead author Woody Hopf, PhD, an associate investigator at Gallo and an assistant adjunct professor of neurology at UCSF.

The study appeared online in Biological Psychiatry (Jan. 3, 2011).

Hopf and his colleagues found that, among rats that have been trained to drink large amounts of alcohol, chlorzoxazone activates the SK-type potassium channel in neurons, which makes the neurons less excitable. The drug's action takes place in the nucleus accumbens, a brain region that in both rodents and humans is part of the reward system that affects craving for alcohol and other addictive substances.

The ability of chlorzoxazone to reduce neuronal excitability is "important," Hopf explained, "because the more excitable neurons in the nucleus accumbens are, the more they respond to the stimulation provided by alcohol, which in turn drives alcohol-seeking behavior."

Applying the results of his previous research to the current study, Hopf found that rats that habitually drink heavily have fewer SK channels in their neurons than rats without an alcohol habit. In the current study, Hopf demonstrated that when the rats' remaining SK channels were activated, "the excitability of the nucleus accumbens was turned down, and this, in turn, suppressed alcohol drinking in heavy-drinking rats."

Hopf sees chlorzoxazone as a possible alcohol-abuse medication among patients for whom currently available drugs do not work, or among patients who do not take the drugs because of adverse or unpleasant side effects. In particular, "this might work for an alcoholic who is in abstinence, and who is doing OK, but who during a critical or stressful period is in danger of going back to drinking," said Hopf. "Chlorzoxazone might be exactly the kind of drug to take the edge off that craving, without side effects."

Hopf said that the next logical step in his research is a clinical trial, "which could begin immediately," since chlorzoxazone is already approved as a medication. He says the trial could be conducted by the Gallo Center, "since we have an in-house clinical trials group with tremendous expertise."

Co-authors of the study are Jeffrey A. Simms, BS, Shao-Ju Chang, BA, Taban Seif, PhD, and Selena E. Bartlett, PhD, of the Gallo Center, and senior author Antonello Bonci, MD, an adjunct professor of neurology at the Gallo Center and UCSF and Scientific Director of the Intramural Research Program at the National Institute on Drug Abuse.

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More information: *Biological Psychiatry*: "Chlorzoxazone, an SK-Type Potassium Channel Activator Used in Humans, Reduces Excessive Alcohol Intake in Rats" www.biologicalpsychiatryjourna … m/article/S0006-3223%2810%2901172-8/abstract

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