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Research offers hope for treatment of cocaine addiction

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New discoveries by researchers at the University of Wisconsin-Milwaukee (UWM) offer potential for development of a first-ever pharmacological treatment for cocaine addiction.

A common beta blocker, propranolol, currently used to treat people with hypertension and anxiety, has shown to be effective in preventing the brain from retrieving memories associated with cocaine use in animal-addiction models, according to Devin Mueller, UWM assistant professor of psychology and a co-author with James Otis of the research.

This is the first time that a therapeutic treatment has been shown to block the retrieval of memories associated with drug addiction, a major reason many addicts experience relapse, says Mueller.

The research is published in the August issue of the journal Neuropsychopharmacology ("Inhibition of β-Adrenergic Receptors Induces a Persistent Deficit in Retrieval of a Cocaine-Associated Memory Providing Protection against Reinstatement.")

Cocaine is one of the worst drug addictions to kick, with about 80 percent of those trying to quit experiencing a relapse within six months.

"Right now, there are no FDA-approved medications that are known to successfully treat cocaine abuse," says Mueller, "only those that are used to treat the symptoms of cocaine withdrawal, which are largely ineffective at preventing relapse."

The effects of propranolol were long-lasting and could be permanent, he says, even without subsequent doses and even in the presence of stimuli known to induce relapse.

Currently, "exposure therapy" is used to help recovering addicts suppress their drug-seeking behavior. In this therapy, the patient is repeatedly exposed to stimuli that provoke cravings but do not satisfy them. Done repeatedly over time, the patient experiences less craving when presented with those stimuli.

The success of exposure therapy, however, is limited. Combining therapy with the use of propranolol, says Mueller, would boost the effectiveness of the treatment.

Propranolol was chosen for the memory study because it has been used before to ease some withdrawal symptoms experienced by recovering cocaine addicts. Those using the drug were able to continue exposure therapy for longer periods than those without the drug.

But Mueller adds that propranolol has never been tested for use with memory extinction before.

In order to develop a drug treatment for overcoming relapse, the next step in the research is to determine where in the brain propranolol acts to mediate the retrieval of cocaine-associated memories.

Provided by University of Wisconsin - Milwaukee