

Researchers see promise for safer opioid pain reliever

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Researchers at the University of Michigan have engineered a new compound that animal tests suggest could offer the pain-relieving properties of opioids such as morphine and oxycodone without the risk of addiction. With more than 100 Americans dying from opioid overdoses every day, there is an urgent need for drugs that offer strong pain-relieving properties without leading to addiction.

Tomás Joaquín Fernández, a postbaccalaureate scholar in the University of Michigan Department of Pharmacology and Edward F Domino Research Center, will present this new preclinical research at the American Society for Pharmacology and Experimental Therapeutics annual meeting during the 2018 Experimental Biology meeting to be held April 21-25 in San Diego. Fernández worked on this research with colleagues in the University of Michigan College of Pharmacy Department of Medicinal Chemistry.

One problem with today's opioids is that patients develop tolerance, which leads to the requirement for more drugs to maintain the same amount of [pain relief](#). "Our hope is that with our novel opioids, patients would need less of the drug over time, which might put them less at risk for the negative side effects of [opioid](#) usage, including addiction, respiratory depression and constipation," said research team member Nicholas Griggs, a doctoral candidate in the Department of Pharmacology.

To develop a better pain reliever, the researchers chemically modified

[compounds](#) modeled after the body's own pain-relieving peptides, which are naturally released by neurons. They engineered the compounds to interact at two opioid receptor types, one that is responsible for pain relief and addiction liability and one that can be employed to reduce addiction liability and tolerance development. After evaluating the compounds in cultured cells, the researchers selected a lead compound to test in mice. It produced pain-relieving effects but was not effective in tests for reward and dependence, effects that can lead to [addiction](#) and withdrawal symptoms. "We are striving to solve the opioid epidemic by working at the most fundamental problem: the effective treatment of pain," said Fernández. "Our work can also provide other researchers with a better understanding of [opioid receptors](#) and interactions between receptors, which could be exploited to develop better options for pain management."

The researchers plan to conduct additional animal behavior studies to fully understand the reduced tolerance and dependence properties of the new pain-relieving compound.

More information: Thomas J. Fernandez will present this research at 12:30-2:30 p.m. Monday, April 23, in Exhibit Halls A-D, San Diego Convention Center (poster C118 689.2) ([abstract](#)).

Provided by Experimental Biology 2018

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