Scientist Discovers New Molecule to Treat Chronic Pain

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(PhysOrg.com) -- Northeastern University Pharmaceutical Sciences professor and Center for Drug Discovery director Alexandros Makriyannis and a team of researchers have created a synthetic molecule that could be used to treat chronic pain in patients with diseases such as diabetes or shingles.

The findings were published in a recent issue of Psychopharmacology in an article titled “Discriminative stimulus functions in rats of AM1346, a high-affinity CB1R selective anandamide analog.” The team of researchers involved in this study included Northeastern University Pharmaceutical Sciences research associate professor Torbjorn U.C. Jarbe, as well as Chen Li and Qian Liu, formerly of the University of Connecticut.

The new molecule, AM1346, mimics, though is more powerful than, anandamide an endogenous cannabinoid neurotransmitter found prominently in the brains of humans and animals. Anandamide is a naturally occurring part of the endocannabinoid system that regulates pain, controls heart rate and blood pressure, and modulates mood and appetite.

In order to test anandamide against AM1346, the researchers studied discriminative behavior in rats and concluded that the animals act in a similar fashion when injected with the two agents. Makriyannis said the rats were trained to respond to an injection of AM1346 by pushing a lever that delivered food to the animals. When trained without exposure

to AM1346, an alternate lever produced food. Thus, the presence or absence of the training drug controlled the choice behavior of the animals. Additionally, the cannabinoid antidote rimonabant blocked these drug effects. That is, the animals selected the nondrug associated lever in tests with rimonabant and the other drugs.

“AM1346 is a more potent and stable synthetic compound than anandamide,” Makriyannis said. “It will serve as a test compound to study and understand more completely the endocannabinoid system and could have potential therapeutic implications as a topically applied pain killer,” he said, adding that there is considerable interest from the pharmaceutical industry for researchers to discover new medications within the body’s biochemical system.

Provided by Northeastern University