

Compound boosts marijuana-like chemical in the body to relieve pain at injury site

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American and Italian researchers have found that a novel drug allows anandamide - a marijuana-like chemical in the body - to effectively control pain at the site of an injury.

Led by Daniele Piomelli, the Louise Turner Arnold Chair in Neurosciences and director of the Center for Drug Discovery at UC Irvine, the study suggests that such compounds could form the basis of pain medications that don't produce sedation, addiction or other central nervous system side effects common with existing painkillers, such as opiates.

"These findings raise hope that the analgesic properties of marijuana can be harnessed to curb pain," Piomelli said. "Marijuana itself is sometimes used in clinical settings for pain relief but causes many unwanted effects. However, specific drugs that amplify the actions of natural, marijuana-like chemicals are showing great promise."

For the study, which appears in the Sept. 19 online version of [Nature Neuroscience](#), rats and mice were given a drug created by Piomelli and colleagues at the Italian universities of Urbino and Parma. The researchers discovered that the compound, URB937, did not enter the [central nervous system](#) but simply boosted the levels of anandamide in peripheral tissues. Still, it produced a profound analgesic effect for both acute and chronic [pain](#). This was surprising, since anandamide had been thought to only work in the brain.

The synthetic drug inhibits FAAH, an enzyme in the body that breaks down anandamide, dubbed "the bliss molecule" for its similarities to the active ingredient in marijuana. A neurotransmitter that's part of the endocannabinoid system, anandamide has been shown in studies by Piomelli and others to play analgesic, antianxiety and antidepressant roles. It's also important in regulating [food consumption](#). Blocking FAAH activity enhances the effects of anandamide without generating the "high" seen with marijuana.

Piomelli and his team are now collaborating with [drug discovery](#) specialists at the Italian Institute of Technology, in Genoa, to develop the new compound - which is protected by a patent application - into a clinically useful medication.

Provided by University of California -- Irvine

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