

Researcher finds method to improve morphine's effect on managing pain

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A method to prevent the body from developing tolerance to morphine, a powerful and commonly used pain medication, has been discovered by a Georgia State University researcher.

The findings by Dr. Anne Murphy, an associate professor in the university's Neuroscience Institute, have been published in the *Journal of Neuroscience*. The peer-reviewed article summarizes research conducted by Murphy and senior graduate student Lori Eidson.

Opioids such as morphine are an important component of clinical [pain](#) management. However, the pain-relieving effects of morphine diminish as the drug is taken over an extended period of time, a condition known as tolerance, resulting in the need for higher and higher doses of morphine to produce the same analgesic effect.

Past research suggests morphine can trigger cells in the central nervous system that inhibit the painkilling effects of the medication and contribute to the development of a tolerance to the drug.

Using an animal model (rats) of persistent inflammatory pain, Murphy and Eidson tested whether blocking a specific receptor in the brain would eliminate the development of morphine tolerance. It did, and more important, their results showed blocking this receptor increased the pain-relieving effects of morphine, such that the rats studied ultimately required half the amount of morphine to produce the same level of [pain relief](#).

"Our results have exciting implications for the clinical treatment and management of chronic pain," said Dr. Murphy who is also associate director of the Neuroscience Institute.

"Targeting this particular receptor could change the way [chronic pain](#) is managed, specifically, enhancing the effects of morphine and eliminating the need for dose escalation over time," Eidson said. "As this receptor has also been implicated in [morphine](#) addiction and dependence, patients could receive pain relief with reduced concern of negative consequences such as addiction."

More information: Murphy, A.Z., & Eidson, L.N. (2013). Blockade of Toll-Like Receptor 4 Attenuates Morphine Tolerance and Facilitates the Pain Relieving Properties of Morphine, *Journal of Neuroscience*, 33(4), 15952-15963.

Provided by Georgia State University

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