

# Why don't painkillers work for people with fibromyalgia?

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People who have the common chronic pain condition fibromyalgia often report that they don't respond to the types of medication that relieve other people's pain. New research from the University of Michigan Health System helps to explain why that might be: Patients with fibromyalgia were found to have reduced binding ability of a type of receptor in the brain that is the target of opioid painkiller drugs such as morphine.

The study included positron emission tomography (PET) scans of the brains of patients with fibromyalgia, and of an equal number of sex- and age-matched people without the often-debilitating condition. Results showed that the fibromyalgia patients had reduced mu-opioid receptor (MOR) availability within regions of the brain that normally process and dampen pain signals – specifically, the nucleus accumbens, the anterior cingulate and the amygdala.

“The reduced availability of the receptor was associated with greater pain among people with fibromyalgia,” says lead author Richard E. Harris, Ph.D., research investigator in the Division of Rheumatology at the U-M Medical School's Department of Internal Medicine and a researcher at the U-M Chronic Pain and Fatigue Research Center.

“These findings could explain why opioids are anecdotally thought to be ineffective in people with fibromyalgia,” he notes. The findings appear in *The Journal of Neuroscience*. “The finding is significant because it has been difficult to determine the causes of pain in patients with

fibromyalgia, to the point that acceptance of the condition by medical practitioners has been slow.”

Opioid pain killers work by binding to opioid receptors in the brain and spinal cord. In addition to morphine, they include codeine, propoxyphene-containing medications such as Darvocet, hydrocodone-containing medications such as Vicodin, and oxycodone-containing medications such as Oxycontin.

The researchers theorize based on their findings that, with the lower availability of the MORs in three regions of the brains of people with fibromyalgia, such painkillers may not be able to bind as well to the receptors as they can in the brains of people without the condition.

Put more simply: When the painkillers cannot bind to the receptors, they cannot alleviate the patient’s pain as effectively, Harris says. The reduced availability of the receptors could result from a reduced number of opioid receptors, enhanced release of endogenous opioids (opioids, such as endorphins, that are produced naturally by the body), or both, Harris says.

The research team also found a possible link with depression. The PET scans showed that the fibromyalgia patients with more depressive symptoms had reductions of MOR binding potential in the amygdala, a region of the brain thought to modulate mood and the emotional dimension of pain.

The study subjects were 17 women with fibromyalgia and 17 women without the condition.

Source: University of Michigan Health System

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