

Discovery reveals blocking inflammation may lead to chronic pain

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Using anti-inflammatory drugs and steroids to relieve pain could increase the chances of developing chronic pain, according to researchers from McGill University and colleagues in Italy. Their research puts into question conventional practices used to alleviate pain. Normal recovery from a painful injury involves inflammation and

blocking that inflammation with drugs could lead to harder-to-treat pain.

"For many decades it's been standard medical practice to treat pain with anti-inflammatory drugs. But we found that this short-term fix could lead to longer-term problems," says Jeffrey Mogil, a Professor in the Department of Psychology at McGill University and E. P. Taylor Chair in Pain Studies.

The difference between people who get better and don't

In the study published in *Science Translational Medicine*, the researchers examined the mechanisms of pain in both humans and mice. They found that neutrophils—a type of white blood cell that helps the body fight infection—play a key role in resolving pain.

"In analyzing the genes of people suffering from [lower back pain](#), we observed active changes in genes over time in people whose pain went away. Changes in the [blood cells](#) and their activity seemed to be the most important factor, especially in cells called neutrophils," says Luda Diatchenko a Professor in the Faculty of Medicine, Faculty of Dentistry, and Canada Excellence Research Chair in Human Pain Genetics.

Inflammation plays a key role in resolving pain

"Neutrophils dominate the early stages of [inflammation](#) and set the stage for repair of tissue damage. Inflammation occurs for a reason, and it looks like it's dangerous to interfere with it," says Professor Mogil, who is also a member of the Alan Edwards Centre for Research on Pain along with Professor Diatchenko.

Experimentally blocking neutrophils in mice prolonged the pain up to

ten times the normal duration. Treating the pain with anti-inflammatory drugs and steroids like dexamethasone and diclofenac also produced the same result, although they were effective against pain early on.

These findings are also supported by a separate analysis of 500,000 people in the United Kingdom that showed that those taking anti-inflammatory drugs to treat their pain were more likely to have pain two to ten years later, an effect not seen in people taking acetaminophen or anti-depressants.

Reconsidering standard medical treatment of acute pain

"Our findings suggest it may be time to reconsider the way we treat acute pain. Luckily pain can be killed in other ways that don't involve interfering with inflammation," says Massimo Allegri, a Physician at the Policlinico of Monza Hospital in Italy and Ensemble Hospitalier de la Cote in Switzerland.

"We discovered that pain resolution is actually an active biological process," says Professor Diatchenko. These findings should be followed up by [clinical trials](#) directly comparing [anti-inflammatory drugs](#) to other [pain](#) killers that relieve aches and pains but don't disrupt inflammation."

"Acute inflammatory response via neutrophil activation protects against the development of [chronic pain](#)" by Marc Parisien et al. was published in *Science Translational Medicine*.

More information: Marc Parisien et al, Acute inflammatory response via neutrophil activation protects against the development of chronic pain, *Science Translational Medicine* (2022). [DOI: 10.1126/scitranslmed.abj9954](https://doi.org/10.1126/scitranslmed.abj9954).

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