Psilocybin found to reduce chronic pain in rats

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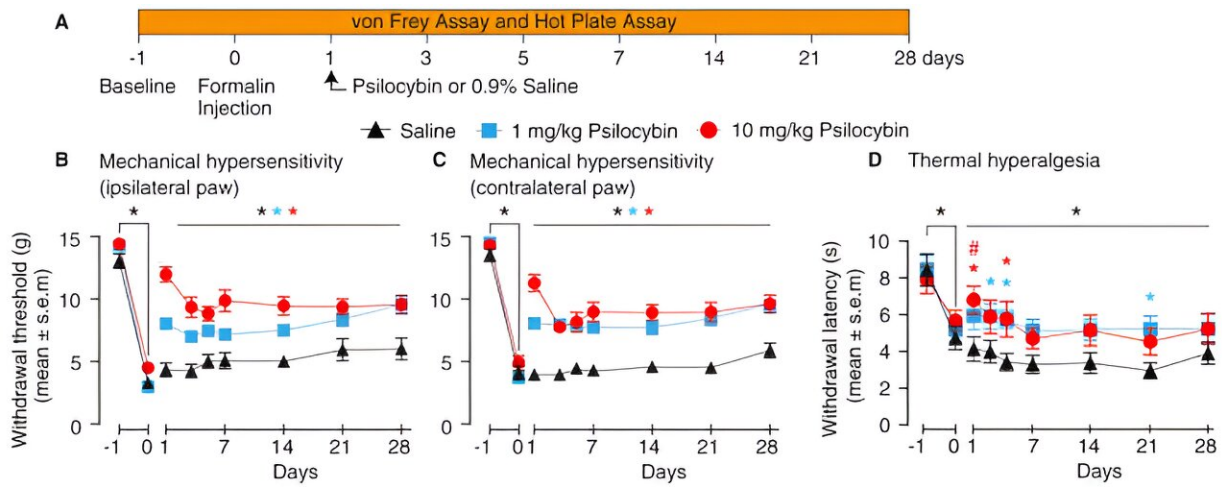

Effect of intravenous psilocybin on mechanical hypersensitivity and thermal hyperalgesia. (A) Schematic illustrating the design and timeline of the experiments. (B,C) Rats administered a low dose of psilocybin showed a significant attenuation of the formalin-induced mechanical hypersensitivity in both hind paws, which persisted for 28 days after psilocybin injection. (D) Treatment with the high dose of psilocybin significantly attenuated formalin-induced thermal hyperalgesia, but the effect was restricted only to the day of psilocybin administration and day 5 after psilocybin injection. Rats treated with the low dose of psilocybin displayed a significant attenuation in the formalin-induced thermal hyperalgesia only on day 3, day 5, and day 21 after psilocybin injection. Credit: *Current Biology* (2023). DOI: 10.1016/j.cub.2023.10.016

A team of anesthesiologists at the University of Michigan, working with

a pair of colleagues from Tryp Therapeutics, has found, via experimentation, that rats can experience a reduction in chronic pain when given injections of psilocybin. In the study, reported in the open-access journal *Current Biology*, the group induced chronic pain in lab rats and treated some of them with injections of psilocybin.

Prior research has suggested that approximately 20% of adults in the U.S. have undergone periods of chronic pain—a statistic that has likely played a role in the ongoing opioid epidemic. Because such drugs can lead to so many problems, medical researchers continue to look for alternatives.

Psilocybin (the mushroom-based compound that can cause psychedelic symptoms) has been cited by people who use it illegally as a treatment for chronic pain, leading the scientific community to take notice. Some studies have already shown that it might prove useful in treating people with depression or addictions.

To find out if the drug might help reduce chronic pain, the research team injected several rats with formaldehyde into one of their feet. This has been found to lead to painful inflammation that can last for several months. They then injected some of the rats with a low dose of psilocybin, some with high doses, and some with saltwater.

The researchers then tested pain sensitivity in the rats by periodically pricking their feet or exposing them to a hot plate over the following month. They found that the rats given psilocybin, either dose, were clearly less sensitive to the pinpricks. They saw no changes when the rats were exposed to a hot plate or in the rats injected with saltwater.

The researchers suggest that psilocybin reduces chronic pain in rats, likely by reshaping the brain in ways that are similar to the way that chronic pain reshapes the brain. More work is required to find out if the

drug may help human patients with chronic pain.

More information: Nicholas Kolbman et al, Intravenous psilocybin attenuates mechanical hypersensitivity in a rat model of chronic pain, *Current Biology* (2023). DOI: 10.1016/j.cub.2023.10.016