

Seeking a treatment for IBS pain in tarantula venom

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Credit: AI-generated image ([disclaimer](#))

For patients who have inflammatory bowel syndrome (IBS), the condition is literally a pain in the gut. Chronic—or long-term—abdominal pain is common, and there are currently no effective treatment options for this debilitating symptom. In a new study in *ACS Pharmacology & Translational Science*, researchers identify a new

potential source of relief: a molecule derived from spider venom. In experiments with mice, they found that one dose could stop symptoms associated with IBS pain.

The sensation of pain originates in [electrical signals](#) carried from the body to the brain by cells called neurons. Tiny channels in the surfaces of neurons help them transmit these signals by allowing positively charged [sodium ions](#) to pass into the cell. There are numerous types of sodium channels, and some pain-killing drugs work by blocking them. However, existing treatments interfere with channels indiscriminately and can only be used briefly—not for [chronic pain](#). Stuart Brierley, Glenn King and colleagues wanted to find a way to selectively target the channels activated during chronic IBS pain.

The researchers focused on a particular sodium channel they suspected was responsible for chronic IBS pain. Then, to block it, they turned to the richest known source of molecules that alter the activity of sodium channels: [spider venom](#). In the venom of a Peruvian tarantula, they discovered a molecule that they named Tsp1a, which had promising blocking activity. To test its potential as a treatment, the researchers used mice that had an IBS-related condition, and they monitored the mice during the experiment to detect a reflex associated with pain. A single Tsp1a treatment delivered into the mice's colons significantly reduced the occurrence of this reflex, indicating pain relief. What's more, Tsp1a appeared highly selective and did not interfere with other body functions, suggesting it could be used safely in humans. While Tsp1a shows promise as a potential treatment for chronic IBS pain, thorough studies of its activity in the body and the immune system's reaction to it will be critical, the researchers write.

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Four of the authors are co-inventors on a U.S. patent application that covers the sequence, derivatives and methods of use for Tsp 1a.

More information: Yan Jiang et al, Pharmacological Inhibition of the Voltage-Gated Sodium Channel NaV1.7 Alleviates Chronic Visceral Pain in a Rodent Model of Irritable Bowel Syndrome, *ACS Pharmacology & Translational Science* (2021). [DOI: 10.1021/acsptsci.1c00072](https://doi.org/10.1021/acsptsci.1c00072)

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