Can Tarantula Venom Help Relieve Chronic Pain?

Proteins found in the venom of this fearsome, furry spider may lead to potent, nonaddictive pain meds.

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According to the Centers for Disease Control and Prevention, about 50 million Americans suffer from chronic pain. Now, scientists at the University of California, Davis (UC Davis) are using a $1.5 million grant from the National Institutes of Health to study the potential pain relief benefits of tarantula venom, reports medicalexpress.com.

For the inquiry, 20 researchers from UC Davis are focusing on venom from the Peruvian green velvet tarantula. The huge spiders are described as "an extremely rare and exotic species of tarantula" that are "docile, aggressive and skittish in nature."

"Spiders and scorpions have millions of years of evolution optimizing peptide, protein and small-molecule poisons in their venom, which we can take advantage of," said Bruce Hammock, a distinguished professor of entomology at the university, an investigator on the project. "The same venoms that can cause pain and neurological dysfunction can also help nerves work better and reduce pain."

Scientists want to see whether this tarantula's venom, which contains a specific protein, can be modified to block pain transmission along a sensory pathway between the nerves and muscles. Their goal is to find a therapeutic drug for those who suffer from chronic pain. The challenge is that it must be as effective as opioids but without the related tolerance and addiction issues associated with the medication.

The investigators are utilizing a special computer program to duplicate the tarantula peptide for lab tests. "Our lead peptides already show efficacy at the level of morphine," said Vladimir Yarov-Yarovoy, PhD, an expert in creating structural models of these protein compounds who assembled the interdisciplinary research team that's working on the project.

Scientists stressed that any possible therapies must undergo testing in animals before being deemed safe for testing in humans, which means it will be at least five years before a drug is ready for consideration.

To learn more about treatments for chronic pain, read “My medication for chronic back pain isn’t working. What are my options other than taking more drugs?” and “Pets Can Help Older Adults Cope With Chronic Pain.”

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