

# Tarantula Venom Contains Novel Insecticide

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Spider venoms are usually toxic when injected into prey, but a new protein discovered in the venom of Australian tarantulas can also kill prey insects that consume the venom orally. The protein is strongly insecticidal to the cotton bollworm, an important agricultural pest, according to research published September 11, 2013, in the open access journal *PLOS ONE* by Glenn King and Maggie Hardy from the Institute of Molecular Bioscience at the University of Queensland, Australia, and colleagues from other institutions.

The small protein, named orally active insecticidal peptide-1 (OAIP-1), was found to be highly toxic to insects that consumed it, with potency similar to that of the synthetic insecticide imidacloprid. Cotton bollworm, a pest that attacks crop plants, was more sensitive to OAIP-1 than termites and mealworms, which attack stored grains.

These and other insect pests reduce global crop yields by 10 to 14 percent annually and damage nine to 20 percent of stored food crops, and several species are resistant to available insecticides. Isolated peptides from the venom of spiders or other venomous insectivorous animals, such as centipedes and scorpions, may have the potential to serve as bioinsecticides.

Alternately, the authors suggest the genes encoding these peptides could be used to engineer insect-resistant plants or enhance the efficacy of microbes that attack insect pests. King elaborates, "The breakthrough discovery that spider toxins can have oral activity has implications not only for their use as bioinsecticides, but also for spider-venom peptides that are being considered for therapeutic use."

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