

Genetic analysis reveals secrets of scorpion venom

July 1 2009

Transcriptomic tests have uncovered the protein composition of venom from the *Scorpiops jendeki* scorpion. Researchers writing in the open access journal *BMC Genomics* have carried out the first ever venom analysis in this arachnid, and discovered nine novel poison molecules, never before seen in any scorpion species.

Yibao Ma worked with a team of researchers from Wuhan University, China, to study the sting of *S. jendeki*, a member of the family Euscorpiidae, which covers Europe, Asia, Africa, and America. He said, "Our work greatly expands the current knowledge of scorpion venoms. We found ten known types and nine novel venom peptides and proteins. These molecules provide a rich, hitherto-unexplored resource for drug development as well as clues into the evolution of the scorpion venom arsenal".

To humans, the sting of scorpions from the Euscorpiidae family tend to be quite mild - about as painful as a mosquito bite. *S. jendeki* venom has never been studied before. The researchers found that it contains ten known poisons, with markedly diverse modes of action and nine new types of venom peptide, whose biological effects are yet to be determined. The scorpion itself, however, is considered harmless - probably because it cannot deliver enough of the poison to cause any damage to a healthy human. Interestingly, neurotoxins, which are major poisons in the venom of another scorpion species that can kill humans, were not found in the *S. jendeki* venom.

Ma concludes, "Many types of venom peptides and proteins have been obtained from diverse scorpion species. Some are widely distributed among scorpions from different families, while others, like some of those discovered in our study, appear to be restricted to particular scorpion lineages. The presence of these common and uncommon venom molecules among different lineages reflects the dynamic evolutionary process of the scorpion venom arsenal".

More information: Transcriptome analysis of the venom gland of the scorpion *Scorpiops jendeki*: implication for the evolution of the [scorpion](#) venom arsenal, Yibao Ma, Ruiming Zhao, Yawen He, Songryong Li, Jun Liu, Yingliang Wu, Zhijian Cao and Wenxin Li, *BMC Genomics* (in press), www.biomedcentral.com/bmcgenomics/

Source: BioMed Central ([news](#) : [web](#))

Citation: Genetic analysis reveals secrets of scorpion venom (2009, July 1) retrieved 9 April 2024 from <https://phys.org/news/2009-07-genetic-analysis-reveals-secrets-scorpion.html>

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