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Editorial

Centipede Venoms as a Source of Pharmacological Leads

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EDITORIAL

Centipede venom has a complex pharmacologic mix of toxins that may induce extreme pain as well as other serious side effects such allergy, myocardial ischemia, and neurotoxicity. Centipede bites are treated with pain relievers, wound care, and tetanus boosters. Centipedes are one of the most ancient and effective venomous terrestrial predator groups. Centipede venoms have been used in traditional medicine for millennia, but little research has been done on them.

Centipede venoms, on the other hand, appear to be very sophisticated chemical arsenals rich in disulfide-constrained peptides with new pharmacology and three-dimensional structure, according to current research. Topics addressed include: This study highlights what is currently known about centipede venom proteins, with an emphasis on disulfide-rich peptides having novel or unexpected pharmacology that might be therapeutically beneficial. The scientists also point out the wide range of restricted three-dimensional peptide scaffolds found in these venoms, which might be beneficial for drug lead bioengineering.

- Centipede venoms, like those of other arthropod predators, are rich in peptides that target neuronal ion channels and receptors, but it's also becoming clear that many of these peptides have unique or unexpected pharmacological characteristics that might be useful in drug development.
- Centipedes are one of the oldest and most effective venomous predator lineages, yet research on their venom has been limited to only a few of the 3500 species that exist. Despite centuries of usage in traditional medicine, centipede venoms remain unappreciated as a potential source of medicines, despite recent improvements in understanding their chemical makeup.
- Centipedes have a venom system that is distinct from that of other venomous arthropods such as spiders and scorpions. Centipede venoms also include a larger proportion of protein toxins and a more structurally diversified array of peptide toxins than spider venoms.
- Centipede venoms include a staggering array of peptide poisons, including a wider range of disulfide-constrained peptide scaffolds than any other venom. Centipede venom appears to include 19 distinct families of disulfide-rich peptides, according to research.
- Despite the enormous diversity of putatively unique three-dimensional peptide folds found in centipede venom, structures for just two of the 19 new peptide-toxin families are now accessible. The repertory of disulfide-stabilized structural templates suited for bioengineering of drug leads and diagnostics is anticipated to increase as these new venom peptides are studied further.

As one might anticipate from neurotoxic venom, centipede venoms are high in peptide toxins that block presynaptic voltage-gated ion channels. These venoms, on the other hand, contain peptides with unusual pharmacology, such as auxiliary subunit-mediated suppression of KV 7.1, CaV channel activation, and even anti-thrombotic peptides. There are currently no centipede venom peptides in late-stage preclinical investigations or clinical trials. The following decade, on the other hand, promises to be a watershed moment, when fundamental research into centipede venom is applied to medication development. Centipede venoms, like those of other arthropod predators, are rich in peptides that target neuronal ion channels and receptors, but it's also becoming clear that many of these peptides have unique or unexpected pharmacological characteristics that might be useful in drug development.

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