

Scientists tap into Antarctic octopus venom

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(PhysOrg.com) -- Researchers have collected venom from octopuses in Antarctica for the first time, significantly advancing our understanding of the properties of venom as a potential resource for drug-development.

The study, conducted by an international team of researchers from the University of Melbourne, the Norwegian University of Technology and Science and the University of Hamburg, provides the first insight into the properties of Antarctic [octopus venom](#). It has also revealed the existence of four new species of octopus.

Venom has long been recognised as a potentially valuable resource for drug development. However, scientists have only recently discovered the largely untapped resource cephalopods such as octopuses, [cuttlefish](#) and [squid](#), possess in their unique venom properties - especially the species that live in sub-zero temperatures.

Team Leader, Dr Bryan Fry from the Bio21 Institute says it was a mystery how venomous animals have adapted their venom to have an effect even in sub-zero temperatures, where most venoms would normally lose their function.

“This is the first study that has collected Antarctic octopus venom and confirmed that these creatures have adapted it to work in sub zero temperatures - the next step is to work out what biochemical tricks they have used,” he says.

Dr Fry says the venom analysis revealed that Antarctic octopus venom

harbours a range of toxins, two of which had not previously been described.

“We have discovered new small proteins in the venom with very intriguing activities - these are potentially useful in drug design, but more will be revealed as the study continues,” he says.

The study follows from Dr Fry’s revelation last year that all octopuses are venomous. The team of scientists then embarked on a huge task to collect and study completely novel venoms to gain a greater understanding of how they work.

“An understanding of the structure and mode of action of venom found in all octopuses may help design drugs for conditions like pain management, allergies and cancer.”

Through funding from the Australian Antarctic Division, the team collected 203 octopuses from Antarctic waters. They then genetically profiled each specimen to identify the species and collected venom to analyse in the lab.

“Not only do Antarctic octopuses have the most unique venoms out there, but there is a lot more species than we originally thought.”

Provided by University of Melbourne

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