Pythons Trick Doctors

The saliva from pythons, and possibly other non-venomous snakes, can trigger cross-reactions in venom detection kits, leading to the wasteful use of antivenoms. A/Prof Bryan Fry of the University of Queensland argues that hospitals should make sure a patient is actually in danger before applying treatments.

Pythons have long since given up using toxins to kill their prey, preferring to squeeze them to death. Their glands secrete large quantities of mucus because, as Fry puts it: “The average child makes a pretty dry meal”. However, Fry has revealed that the saliva still contains relics of the venom used by the distant ancestor of pythons, and this can react with the tests given to a snake-bite victim.

“Part of the problem is that venom detection kits are misnamed,” says Fry. “They should really be called ‘identification kits’ and certainly should not be used to decide whether antivenom needs to be applied.”

Fry argues that hospitals need to base decisions about the need for treatment on the clinical signs. “We had a case where a member of our team was bitten by a curl snake, and Mt Isa Hospital argued he didn’t need antivenom because the detection kit didn’t indicate anything. We told them this was because the patient, who was showing all the signs of a severe reaction, had been bitten by a snake so rare it was not in the standard kit, and they needed to give him the polyvalent antivenom. Eventually they did and it worked well.”

The kits exist because polyvalent antivenoms are much more expensive than those targeted at individual species, and require larger doses. However, Fry is concerned that remote hospitals keep limited stocks of the expensive antivenoms, which have a short shelf life. Using the only vial of a particular antivenom because the kit wrongly indicates the presence of toxins at the site of a python bite could prove fatal if another snakebite victim presents at hospital before antivenom stocks are replenished.

Fry acknowledges that python bites are rare, and most doctors check clinical signs, but wonders how often bites occur from other harmless snakes. “Australia does not have a lot of the rear-fanged snakes that produce venoms that affect their prey but are harmless to humans, but these are common in many other countries, so this could be an issue elsewhere.”

There has been a previous report of python saliva triggering venom detection, but Fry says it was dismissed as an anomaly. However, in a paper in *Molecular and Cellular Proteomics*, Fry sheds light on the evolution of snake and lizard venom, including traces of ancient venoms in python saliva. He also reveals the discovery of a potentially useful peptide in python saliva unlike anything seen in more-studied snakes, adding: “Novel compounds with significant potential for use in drug design and development may be uncovered in the most unlikely of places”.

Venom detection kits might indicate that A/Prof Bryan Fry is in danger after being bitten by this python, but he assures us it is “only a flesh wound” and the poison detected is archaic.