

INTERSPECIFIC IMMUNITY TO VENOM IN SNAKES

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The venoms of Tiger Snakes *Notechis* and Copperheads *Austrelaps* are neutralised in humans by the same monovalent anti-venom (Trinca, 1979). This indicates a similarity between venoms of both these genera.

During a six week period in early 1992, Darren Dawber of Plenty Lane, Greensborough, Victoria, held an 80 cm, male Tiger Snake (*Notechis scutatus*) from the Junction of the Acheron and Goulburn Rivers, Victoria (37° 14'S, 145° 42'E), in an indoor cage with a 98 cm Highlands Copperhead *Austrelaps ramsayi* from the Acheron River, Narbethong district, Victoria (37° 31'S, 145° 41'E).

Both snakes were fed on mice, which they took readily. On six separate occasions the *A. ramsayi* was seen biting the head of the *N. scutatus* during the feeding sessions. The bites appeared substantial, with the *A. ramsayi* chewing on the head of the other snake. This would have almost certainly resulted in envenomation on every occasion. The *N. scutatus* never displayed any ill effects from having been bitten by the *A. superbus*. At no time was the *N. scutatus* observed biting the *A. superbus*.

On 5th October 1995, Fred Rossignoli observed a captive 180 cm King Brown snake *Pseudechis australis* from near Whyalla, South Australia bite a 130 cm Eastern Brown Snake *Pseudonaja textilis* from 3 km north of Toolondo Reserve, Victoria (36° 59'S, 141° 56'E). The bite was on the dorsal mid-back region, slightly to one side of the spine. Within 2 hours the bite region had swollen to an enormous extent, being described by Rossignoli as being 'like a balloon'. This swelling

appeared to peak about 6 hours after the bite and remained puffy in appearance for some hours after. 24 hours after the bite, virtually all the swelling had subsided, except for some minor swelling at the bite site (both fangs had penetrated). In another incident the same *P. australis* bit another 200 cm *P. australis* from near Glen Helen Homestead, Central Australia (23° 47'S, 133° 01'). On that occasion, the biting snake appeared to hang on to the other snake and 'pump' the venom glands. The bitten snake showed no ill effects from the bite. All the snakes held by Rossignoli were long term captives used as part of an educational display in an open pit.

In 1984 a long-term captive 1000 cm Speckled Brown Snake *Pseudonaja guttata* from an unknown locality accidentally bit itself, when striking at a live mouse in the same cage. The bite was in the middle of the snake's back, slightly to one side of the spine. The bite site swelled and some days later the flesh in the region appeared to be necrotic and oozing pus. The snake, held by Roy Pails of Ballarat, Victoria, died shortly after. The snake had previously been in perfect health. Since that time, Pails has noted captive Death Adders *Acanthophis antarcticus* and King Brown Snakes *Pseudechis australis* biting one another without apparent ill effect. This has been observed 'dozens' of times.

In the period 1981-84, the author held Death Adders *Acanthophis antarcticus* and Desert Death Adders *Acanthophis pyrrhus* in substantial numbers. On many occasions both species were held together in the same cages. Despite the certainty of the snakes bit-

ing one another accidentally, no deaths as a result of envenomation occurred.

Kellaway (1931) concluded that Australian snakes are not only immune to their own venom, but also similar venoms from other snake species. The information here corroborates Kellaway's finding. Most herpetologists appear to think that Australian snakes are immune to their own venoms, including Fleay (1937, 1951), Hoser (1985), Kinghorn (1964) and Worrell (1970).

Hoser (1985) not only documented cases of immunity of snakes to their own species venoms, but also two cases of alleged non-immunity by the same or similar snake species which could warrant further investigation. Van Woerkom (1985) and Stettler (1985) documented a case of two healthy three and a half year old *Acanthophis* sp. dying after being bitten by a third specimen which had come from the same litter, all three having been born in captivity.

Douglas, Nichol and Peck (1933) concluded, after experimentation, that some highly venomous viperids from North America had no exceptional immunity to their own venoms within the context of injection by one snake into another similar snake.

Clearly immunity of snakes to snake venoms warrants further investigation.

ACKNOWLEDGEMENTS

Darren Dawber, Roy Pails, Fred Rossignoli and Rob Valentic provided some of the case material cited above.

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