

#### 4: ISOLATION AND PROPERTIES OF A HIGH MOLECULAR WEIGHT NEUROTOXIN FROM THE EASTERN BROWN SNAKE (*PSEUDONAJA TEXTILIS*)

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The Australian eastern brown snake (*Pseudonaja textilis*) is recognized as one of the most dangerous of Australian snakes<sup>1</sup> and accounts for approximately 30% of snake bite cases in Australia.

The venom of *P. Textilis* (BSV) has been neglected by previous workers, probably because the low average venom yield of 2 mg, coupled with the cost of the crude venom made work with it difficult. BSV is Australia's second most toxic terrestrial snake venom, behind only the small-scaled snake, *Parademansia microlepidotus*<sup>2</sup>. The main actions of BSV *in vivo* are neurotoxic and coagulant<sup>3</sup>.

Crude BSV contains at least nine (9) distinct protein components as seen by microimmunoelectrophoresis and two-directional polyacrylamide gel electrophoresis<sup>4</sup>. We have succeeded in isolating the principle neurotoxin from BSV. The toxin is 4-5% by weight of the crude venom and possesses close to 70% of total venom toxicity. Its molecular weight, as determined by meniscus depletion in the ultracentrifuge was 88,000. The toxin is homogeneous by gel filtration and analytical ultracentrifugation in non-denaturing media. Polyacrylamide gel electrophoresis of the toxin at pH 8.3 yielded six closely spaced anodal moving components with isoelectric points in the pH range 3-5. When the toxin was subjected to gel filtration in 8 M urea five (5) peaks were obtained. The neurotoxin tentatively named "textilon" consists of about 20% carbohydrate which includes sialic acid. Treatment of the toxin with neuraminidase did not effect its toxicity.

The intravenous LD<sub>50</sub> of textilon in mice is 0.6 µg/kg with dilutions made in 0.1% bovine serum albumin/saline and 3.0 µg/kg with saline as diluent.

This low LD<sub>50</sub> makes it the most potent neurotoxin yet isolated from any snake venom.

#### REFERENCES

- 1 Venomous Australian Animals Dangerous to Man. Ed. J. R. Garnet, 1968, CSL Pub.
- 2 Sutherland, S. K., Broad, A. J., Tanner and Covacevich J. Med. J. Aust., 1978, 1, 288.
- 3 Kellaway, C. H. Med. J. Aust., 1931, 2, 747.
- 4 Broad, A. J. Sutherland, S. K., Tanner, C. and Covacevich, J. Mem. Queensland Museum, 1978, in press.