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SEXUAL DYSFUNCTION

Brazilian spider toxin analogue potentiates erection via NO pathway

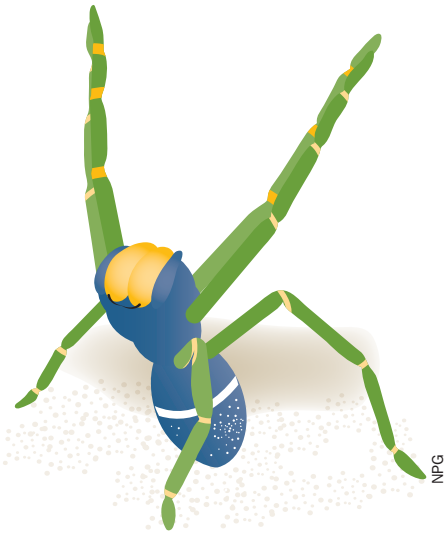
A peptide analogue comprising the active component of the venom of the Brazilian wandering spider (*Phoneutria nigriventer*) potentiates erectile function in rodents, according to data recently published in the *Journal of Urology*.

PnPP-19 is a synthetic, nontoxic peptide, comprising the 19-amino acid residues of the spider toxin PnTx2-6 that have been shown to interact with sodium channels in previous studies. PnTx2-6 increases relaxation of rat corpus cavernosal strips and corporal relaxation in rats *in vivo* via a decrease in sodium channel inactivation rate. However, the toxic side effects of using *Phoneutria nigriventer* toxin *in vivo*—including vascular congestion in the kidney, liver, lung and myocardium, brain oedema, and pain—are serious, and chemical synthesis of the toxin is complex. These obstacles are avoided by using the analogue PnPP-19, designed by Silva and colleagues in this study.

The team first investigated the effect of PnPP-19 on rat penile erection by measuring the intracavernosal pressure/mean arterial pressure (ICP/MAP) ratio and frequency. PnPP-19 was shown to potentiate erectile function after ganglionic electrical field stimulation (EFS) at 4 Hz and 8 Hz, with no effect on MAP. Further study using isolated rat cavernosal strips corroborated these data, showing that PnPP-19 potentiated cavernosal relaxation at 4–8 Hz EFS. They also observed that incubation of corporal strips with PnPP-19 augmented EFS-induced cGMP levels, an effect inhibited by L-NAME and partially blocked by 7-NI, suggesting that this effect was dependent on nNOS activity.

In vivo studies in mice demonstrated that PnPP-19 is nontoxic, with histopathological review of kidney, heart, liver, lung and brain tissues showing no signs of toxicity.

Many patients with erectile function do not respond to treatment with phosphodiesterase Type 5 inhibitors, the current standard-of-care. The authors hope that PnPP-19 might, therefore, eventually offer an alternative therapeutic approach for men with ED.



NPG

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Original article Silva, C. N. *et al*. PnPP-19, a synthetic and non toxic peptide designed from a P. nigriventer toxin, potentiates erectile function via NO/cGMP. *J. Urol.* doi:10.1016/j.juro.2015.06.081