

Supplementary Information

Diversification of a single ancestral gene into a successful toxin superfamily in highly venomous Australian funnel-web spiders

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Table 1: Maximum-likelihood parameter estimates for ω -HXTXs

Model	Likelihood ($\ln$)	ω_0^a	Parameters	Sign. ^b	Sites with $\omega > 1^c$ B.E.B
M0 (One ratio)	-1565.393852	0.64	$= \omega_0$		-
M1 (Neutral)	-1548.685108	0.62	$P_0: 0.438$ $\omega_0: 0.14$ $P_1: 0.561$ $\omega_1: 1.0$		-
M2 (Selection)*	-1547.972110	0.73	$P_0: 0.434$ $\omega_0: 0.16$ $P_1: 0.449$ $\omega_1: 1.0$ $P_2: 0.115$ $\omega_2: 1.85$ $P_0: 0.229$ $\omega_0: 0.04$	$P > 0.05^{NS}$	0 (PP ≥ 0.99) 0 (P ≥ 0.95)
M3 (Discrete)*	-1546.808533	0.69	$P_1: 0.536$ $\omega_1: 0.55$ $P_2: 0.233$ $\omega_2: 1.64$	$P << 0.001$	-
M7 (β)	-1549.004305	0.58	$p: 0.39035$ $q: 0.27423$ $p_0: 0.803$ $p: 0.699$		-
M8 (β and ω)*	-1547.159647	0.69	$q: 0.815$ $p_1: 0.196$ $\omega: 1.66$	$P > 0.05^{NS}$	0 (PP ≥ 0.99) 0 (P ≥ 0.95)

Legend

a dn/ds (weighted average)

b Significance of the model in comparison with the null model

c Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$; $P > 0.05^{NS}$: Not significant at 0.05

Table 2: Maximum-likelihood parameter estimates for κ -HXTXs

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	Sites with $\omega > 1^c$
B.E.B					
M0 (One ratio)	-403.406383	1.06	$= \omega_0$		-
M1 (Neutral)	-403.412605	1.0	$P_0: 0.00001$ $\omega_0: 0.0$ $P_1: 0.999$ $\omega_1: 1.0$		-
M2 (Selection)*	-403.406383	1.06	$P_0: 0.0$ $\omega_0: 1.0$ $P_1: 0.0001$ $\omega_1: 1.0$ $P_2: 0.999$ $\omega_2: 1.06$ $P_0: 0.358$ $\omega_0: 1.06$	$P > 0.05^{N.S}$	0 (PP ≥ 0.99) 0 (P ≥ 0.95)
M3 (Discrete)*	-403.406383	1.06	$P_1: 0.352$ $\omega_1: 1.06$ $P_2: 0.289$ $\omega_2: 1.06$	$P > 0.05^{N.S}$	-
M7 (β)	-403.412606	1.0	$p: 0.56027$ $q: 0.00500$		-
M8 (β and ω)*	-403.405829	1.06	$p_0: 0.029$ $p: 0.005$ $q: 1.23$ $p_1: 0.970$ $\omega: 1.09$	$P > 0.05^{N.S}$	0 (PP ≥ 0.99) 0 (P > 0.95)

Legend

a dn/ds (weighted average)

b Significance of the model in comparison with the null model

c Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$; **P > 0.05^{N.S}**: Not significant at 0.05

Table 3: Maximum-likelihood parameter estimates for complete Shiva superfamily (combined)

Model	Likelihood (ι)	ω_0^a	Parameters	Sign. ^b	Sites with $\omega > 1^c$
B.E.B					
M0 (One ratio)	-1863.156921	0.69	$= \omega_0$		-
M1 (Neutral)	-1839.163417	0.66	$P_0: 0.387$ $\omega_0: 0.137$ $P_1: 0.612$ $\omega_1: 1.0$		-
M2 (Selection)*	-1836.952320	0.83	$P_0: 0.364$ $\omega_0: 0.14$ $P_1: 0.509$ $\omega_1: 1.0$ $P_2: 0.125$ $\omega_2: 2.15$ $P_0: 0.304$ $\omega_0: 0.0$ $P_1: 0.484$ $\omega_1: 0.75$ $P_2: 0.211$ $\omega_2: 1.81$	$P > 0.05^{NS}$	0 ($PP \geq 0.99$) 0 ($P \geq 0.95$)
M3 (Discrete)*	-1836.534243	0.78	$p: 0.40011$ $q: 0.24418$ $p_0: 0.800$ $p: 0.582$ $q: 0.528$ $p_1: 0.199$ $\omega: 1.81$	$P < 0.001$	-
M7 (β)	-1840.113352	0.62			-
M8 (β and ω)*	-1836.795071	0.78		$P < 0.05$	0 ($PP \geq 0.99$) 1 ($P > 0.95$)

Legend

a dn/ds (weighted average)

b Significance of the model in comparison with the null model

c Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$; **P > 0.05^{NS}**: Not significant at 0.05

Table 4: Accession numbers for toxin sequences used in this study

No.	Toxin Name	Accession number	CODE
1	omega/kappa-hexatoxin-Arlg_1	HG001293	H
2	omega/kappa-hexatoxinArlg_2	HG001294	H
3	omega/kappa-hexatoxinArlg_3	HG001295	H
4	omega/kappa-hexatoxinArlg_3_2	NA*	H
5	omega/kappa-hexatoxinArlg_4	HG001296	H
6	omega/kappa-hexatoxinArlg_5	HG001297	H
7	omega/kappa-hexatoxinHvlg_1	HG001298	H
8	omega/kappa-hexatoxinHvlg_2	HG001299	H
9	omega/kappa-hexatoxinHvlg_3	HG001300	H
10	omega/kappa-hexatoxinHvlg_4	HG001301	H
11	omega/kappa-hexatoxinHvlg_5	HG001302	H
12	omega/kappa-hexatoxinHvlg_6	HG001303	H
13	omega/kappa-hexatoxinHvlg_7	HG001309	H
14	kappa-hexatoxin-Hfla	P0C2L8	K
15	kappa-hexatoxin-Hv1a	P82227	K
16	kappa-hexatoxin-Hv1b	P82226	K
17	kappa-hexatoxin-Hv1c_1	P82228	K
18	kappa-hexatoxin-Hv1c_2	P82228	K
19	kappa-hexatoxin-Hv1c_3	P82228	K
20	kappa-hexatoxin-Hv1c_4	P82228	K
21	kappa-hexatoxin-Hv1d	HG001311	K
22	kappa-hexatoxin-Hv1e	HG001310	K
23	omega/kappa-hexatoxin-Hv1h	HG001308	H
24	kappa-hexatoxin--Hmol1a	HG001312	K
25	omega-hexatoxin-Arla_1	A5AH0, P83580	O
26	omega-hexatoxin-Arla_2	A5AH0, P83580	O
27	omega-hexatoxin-Arla_3	P83580	O
28	omega-hexatoxin-Arlb_1	A5A3H1	O
29	omega-hexatoxin-Arlb_2	A5A3H1	O
30	omega-hexatoxin-Arld_1	A5A3H3	O
31	omega-hexatoxin-Arld_2	A5A3H3	O
32	omega-hexatoxin-Arld_3	A5A3H3	O
33	omega-hexatoxin-Arld_4	A5A3H3	O
34	omega-hexatoxin-Arle_1	A5A3H4	O
35	omega-hexatoxin-Arle_2	A5A3H4	O
36	omega-hexatoxin-Arlf	A5A3H5	O
37	omega-hexatoxin-Arlh	NA	O
38	omega-hexatoxin-Hfla	P0C2L4	O
39	omega-hexatoxin-Hi1a_1	P0C2L5	O
40	omega-hexatoxin-Hi1a_2	P0C2L5	O
41	omega-hexatoxin-Hi1a_2	P0C2L5	O
42	omega-hexatoxin-Hi1a_3	P0C2L5	O
43	omega-hexatoxin-Hi1a_4	P0C2L5	O
44	omega-hexatoxin-Hi1a_5	P0C2L5	O
45	omega-hexatoxin-Hi1b_1	P0C2L6	O
46	omega-hexatoxin-Hi1b_10	P0C2L6	O
47	omega-hexatoxin-Hi1b_2	P0C2L6	O

48	omega-hexatoxin-Hi1b_3	P0C2L6	O
49	omega-hexatoxin-Hi1b_4	P0C2L6	O
50	omega-hexatoxin-Hi1b_5	P0C2L6	O
51	omega-hexatoxin-Hi1b_6	P0C2L6	O
52	omega-hexatoxin-Hi1b_7	P0C2L6	O
53	omega-hexatoxin-Hi1b_8	P0C2L6	O
54	omega-hexatoxin-Hi1b_9	P0C2L6	O
55	omega-hexatoxin-Hi1c_1	P0C2L7	O
56	omega-hexatoxin-Hi1c_2	P0C2L7	O
57	omega-hexatoxin-Hi1c_2_2	P0C2L7	O
58	omega-hexatoxin-Hi1c_3	P0C2L7	O
59	omega-hexatoxin-Hi1d	HG001286	O
60	omega-hexatoxin-Hi1d_2	NA	O
61	omega-hexatoxin-Hi1e	HG001284	O
62	omega-hexatoxin-Hi1f	HG001283	O
63	omega-hexatoxin-Hi1g_1	HG001304	O
64	omega-hexatoxin-Hi1g_2	HG001305	O
65	omega-hexatoxin-Hi1g_3	HG001306	O
66	omega-hexatoxin-Hi1g_4	HG001307	O
67	omega-hexatoxin-Hmo1a_1	HG001313	O
68	omega-hexatoxin-Hmo1a_2	HG001314	O
69	omega-hexatoxin-Hmo1b	HG001315	O
70	omega-hexatoxin-Hmo1c	HG001316	O
71	omega-hexatoxin-Hmo1d_1	HG001317	O
72	omega-hexatoxin-Hmo1d_2	HG001318	O
73	omega-hexatoxin-Hmo1d_3	HG001319	O
74	omega-hexatoxin-Hmo1e	NA	O
75	omega-hexatoxin-Hv1a	P56207	
76	omega-hexatoxin-Hv1b	P81595	O
77	omega-hexatoxin-Hv1c	P81596	O
78	omega-hexatoxin-Hv1d	P81597	O
79	omega-hexatoxin-Hv1e	P81598	O
80	omega-hexatoxin-Hv1f	P81599	O
81	omega-hexatoxin-Hvn1a	HG001285	O
82	omega-hexatoxin-Hvn1a_2	NA	O
83	omega-hexatoxin-Hvn1b_1	HG001287	O
84	omega-hexatoxin-Hvn1b_2	HG001288	O
85	omega-hexatoxin-Hvn1b_3	HG001289	O
86	omega-hexatoxin-Hvn1b_4	HG001290	O
87	omega-hexatoxin-Hvn1b_5	HG001291	O
88	omega-hexatoxin-Hvn1b_6	HG001292	O
89	omega-hexatoxin-Hvn1b_6_2	NA	O
90	omega-actinopodiotoxin	P83588	O

*NA indicates sequences without a corresponding accession number either because they were duplicates (e.g., omega-hexatoxin-Hvn1b_6 and omega-hexatoxin-Hvn1b_6_2) or have an incomplete nucleotide sequence (e.g., omega-hexatoxin-Hmo1e). Toxin sequences can be also be downloaded from the ArachnoServer Spider Toxin database (www.arachnoserver.org).

Figure 1: Alignment of venom-peptide sequences used in this study

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>omega-hexatoxin-Arlc      MNTATGVIALLVLATVIGICIEAEDTRADLQG-----GEAAEK-VFRRSPTCIPSGQPCPY-NENYCSQ-SCTFKENENANTVKRCD----
>omega-hexatoxin-Arlh      MNTATGVIALLVLATVIGICIEAEDTRADLQG-----GEAAEK-VFRRSPTCIPSGQPCPY-NENCCSQ-SCTFKENENANTVKRCD----
>omega-hexatoxin-Arlf      MNTATGVIALLVLATVIGICIEAEDTRADLQG-----GEAAEK-VFRRSPTCIPSGQPCPY-NENCCSQ-SCTFKENETGNTVKRCD----
>omega-hexatoxin-Arl_3     MNTATGVIALLVLATVIGICIEAEDTRADLQG-----GEAAEK-VFRRSPTCIPSGQPCPY-NENCCSQ-SCTFKENENGNTVKRCD----
>omega-hexatoxin-Arl_2     MNTATGVIALLVLATVIGICIEAEDTRADLQG-----GEAAEK-VFRRSPTCIPSGQPCPY-NENCCSQ-SCTFKENENGNTVKRCD----
>omega-hexatoxin-Arl_1     MNTATGVIALLVLATVIGICIEAEDTRADLQG-----GEAAEK-VFRRSPTCIPSGQPCPY-NENCCSQ-SCTFKENENGNTVKRCD----
>omega-hexatoxin-Arl_4     MNTATGVIALLVLTIVIGICIEAEDTRADLQG-----GEAAEK-VFRRSPTCIPSGQPCPY-NENCCSQ-SCTFKENENGNTVKRCD----
>omega-hexatoxin-Hvn1a     MNTATGVIALLVLATVIGICIEA-ETRADLQGAFESYEGEAAEK-IFRRSPTCIPSGQPCPY-NENCCSK-SCTYKEMKTATPVQRCD----
>omega-hexatoxin-Hvn1a_2   MNTATGVIALLVLATVIGICIEA-ETRADLQGAFESYEGEAAEK-IFRRSPTCIPSGQPCPY-NENCCSK-SCTYKEMKTATPVQRCD----
>omega-hexatoxin-Hvn1b_3   MNTATGVIALLVLATVIGICIEVEETRADLQGAFESYEGEAAEK-IFRRSPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hvn1b_5   MNTATGVIALLVLATVIGICIEAFESYEGEAADK-IFRRSPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hvn1b_4   MNTATGVIALLVLATVIGICIEAETRADLQGAFESYEGEAADK-IFRRSPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hvn1b_1   MNTATGVIALLVLATVIGICIEAETRADLQGAFESYEGEAADK-IFRRSPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hvn1b_2   MNTATGVIALLVLATVIGICIEAETRADLQGAFESYEGEGADK-IFRRSPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hvn1b_6   MNTATGVIALLVLATVIGICIEAEDTRADLQGGLLESYEGEAADK-IFRRSPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hvn1b_6_2 MNTATGVIALLVLATVIGICIEAEDTRADLQGGLLESYEGEAADK-IFRRSPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Arl_1     MNTATGVIALLVLATVIGICIEAEDTRADLQG-----GEAAEK-VFRRSPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Arl_2     MNTATGVIALLVLATVIGICIEAEDTRADLQG-----GEAAEK-VFRRSPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Arla_1     MNTATGFIVLLVLATVILGAIEAEDAVPDFEGGFASHAREDTVGGKIRRSSVCIPSGQPCPY-NEHCCSG-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Arla_2     MNTATGFIVLLVLATVILGAIEAEDAVPDFEGGFASHAREDTVGGKIRRSSVCIPSGQPCPY-NEHCCSG-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hmold_1    MNTATGVIALLVLATVIGICIEAEDTMADLQGGFESYDGEAAKR-IFRRSPVCIPSGQPCPY-NEHCCSG-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hmold_2    MNTATGVIALLVLATVIGICIEAEDTMADLQGGFESYDGEAAKR-IFRRSPVCIPSGQPCPY-NEHCCSG-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hmold_3    MNTATGVIALLVLATVIGICIEAENTRADLQGGFESYEGEAAEK-IFRRSPVCIPSGQPCPY-NEHCCSG-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hild      MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAER-IFRRSPTCIPTGQPCPY-NENCCNQ-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hild_2     MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAER-IFRRSPTCIPTGQPCPY-NENCCNQ-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilb_9     MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAER-IFRRSPTCIPTGQPCPY-NENCCSQ-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilb_7     MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAER-IFRRSPTCIPTGQPCPY-NENCCSQ-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilb_6     MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAER-IFRRSPTCIPTGQPCPY-NENCCSQ-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilb_4     MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAER-IFRRSPTCIPTGQPCPY-NENCCSQ-SCTYKANENGNOVKRCD----
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>omega-hexatoxin-Hilb_2     MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAER-IFRRSPTCIPTGQPCPY-NENCCSQ-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilb_8     MNTATGFIVLLVLATVIGICIST-----DFQGGFEPYEEEDAER-IFRRSPTCIPTGQPCPY-NENCCSQ-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hila_2     MNTATGFIVLLVLATVIGICISA-----DFQGSFEPYEEEDAER-IFRRS-TCTPTDQPCPY-HESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hila_4     MNTATGFIVLLVLATVIGICISA-----DFQGSFEPYEEEDAER-IFRRS-TCTPTDQPCPY-HESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hila_5     MNTATGFIVLLVLATVIGICISA-----DFQGSFEPYEEEDAER-IFRRS-TCTPTDQPCPY-HESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilg_3     MNTATGFIVLLVLATVIGICISA-----DFQGSFEPYEEEDAER-IFRRS-TCTPTDQPCPY-DESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilg_4     MNTATGFIVLLVLATVIGICISA-----DFQGSFEPYEEEDAER-IFRRS-TCTPTDQPCPY-DESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilg_1     MNTATGFIVLLVLATVIGICISA-----DFEGSFEPYEEEDAER-IFRRS-TCTPTDQPCPY-DESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hila_3     MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAER-IFRRS-TCTPTDQPCPY-HESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilg_2     MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAER-IFRRS-TCTPTDQPCPY-DESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilc_2     MNTATGFIVLLVLATVIGICISA-----DFQGGFES-SVEDAER-LFRRSSTCIRTDPQPCPY-NESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilc_2_2   MNTATGFIVLLVLATVIGICISA-----DFQGGFES-SVEDAER-LFRRSSTCIRTDPQPCPY-NESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilc_3     MNTATGFIVLLVLATVIGICISA-----DFQGGFES-SVEDAER-LFRRSSTCIRTDPQPCPY-NESCCSG-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hilb_10    MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEEEDAQR-IFRRSPTCIPTGQPCPY-NENCCSQ-SCTYKANENGNOVKRCD----
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>omega-hexatoxin-Hile       MNTATGFIVLLVLATVIGICISA-----DFQGGFEPYEGEDAER-IFRRSPTCIPTGQPCPY-NENCCSQ-SCTYKANENGNOVKGCD----
>omega-hexatoxin-Hilb_5     MNTATGFIVLLVLATVIGICISV-----DFQGGFESYEEEDAER-IFRRSPTCIPTGQPCPY-NENCCSQ-SCTYKANENGNOVKRCD----
>omega-hexatoxin-Hmola_1    MNTATGVIALLVLATVIGICIEAEDTREDFQGGFESYDGEAAEK-IFRRAPVCTRDTQPCPY-NEDCCSG-SCTLKKNENGNOVKRCD----

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>omega-hexatoxin-Hmolb	MNTATGVIALLLVLATVIGCIEAEDTREDTQGGFESDDGEAAEK-IFRRAPVCTRTDQPCPY-DQDCCSG-SCTLKKNENGNLVKRCD----
>omega-hexatoxin-Hmola_2	MNTATGVIVLLVLATVIGCIEAEDTREDLQGGFESYDGEAAEK-IFRRAPVCTRTDQPCPY-NEDCCSG-SCTLKKNENGNLVKRCD----
>omega-hexatoxin-Hmolc	MNTATGVIALLLVLATVIGFIEAENTRADLQGGFESYEGEAAEK-IFRRSPVCTRTDQPCPY-DQDCCSG-SCTLKKNENGNLVKRCD----
>omega-hexatoxin-Arlb_1	MNTATGFIVLLVLATVLGCIEA-----G--ESHVREDAMG-RARR-GACTPTGQPCPY-NESCCSG-SCQEQLNENGHTVKRCV----
>omega-hexatoxin-Arlb_2	MNTATGFIVLLVLATVLGCIEA-----G--ESHVREDAMG-RARR-GACTPTGQPCPY-NESCCSG-SCQEQLNENGHTVKRCV----
>omega-hexatoxin-Hvla	-----SPTCIPSGQPCPY-NENCCSQ-SCTFKENENGNTVKRCD----
>omega-hexatoxin-Hilb_1	-----SPTCIPSGQPCPY-NENCCSQ-SCTYKANENGNTVKRCD----
>omega-hexatoxin-Hfla	-----SPTCIRSGQPCPY-NENCCSQ-SCTFKTNENGNTVKRCD----
>omega-hexatoxin-Hvlc	-----SSTCIPSGQPCPY-NENCCSQ-SCTFKENENGNTVKRCD----
>omega-hexatoxin-Hvlb	-----SSTCIPSGQPCPY-NENCCSQ-SCTYKENENGNTVKRCD----
>omega-hexatoxin-Hvle	-----SPTCIPSGQPCPY-NENCCSQ-SCTYKANENGNTVKRCD----
>omega-hexatoxin-Hvld	-----SPTCIPSGQPCPY-NENCCSK-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Arla_3	-----SSVCIPSGQPCPY-NEHCCSG-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hvlf	-----SAVCIPSGQPCPY-SKYCCSG-SCTYKTNENGNSVQRCD----
>omega-hexatoxin-Hmole	-----STVCIPSGQPCPY-SKYCCSG-SCTYKENENGNTVQRCD----
>omega-hexatoxin-Hila_1	-----ST-CTPTDQPCPY-HESCCSG-SCTYKANENGNTVKRCD----
>omega-hexatoxin-Hilc_1	-----SSTCIRTDQPCPY-NESCCSG-SCTYKANENGNTVKRCD----
>omega/kappa-hexatoxin-Arlg_1	MNTATGFIVLLVLATVLGGIEA-----G--ESHMRKDAMG-RVRR-QYCVVDQPCSLNTQPCDDATCTQELNENDNTVYYCRA---
>omega/kappa-hexatoxin-Arlg_2	MNTATGFIVLLVLATVLGGIEA-----R--ESHMRKDAMG-RVRR-QYCVVDQPCSLNTQPCDDATCTQELNENDNTVYYCRA---
>omega/kappa-hexatoxin-Arlg_3	MNTATGFIVLLVLATVLGGIEA-----G--ESHMRKDAMG-RVRR-QYCVVDQPCSLNTQPCDDATCTQELNENDNTVYYCRA---
>omega/kappa-hexatoxin-Arlg_3_2	MNTATGFIVLLVLATVLGGIEA-----G--ESHMRKDAMG-RVRR-QYCVVDQPCSLNTQPCDDATCTQELNENDNTVYYCRA---
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Figure 2: Alignment of nucleotide sequences used in this study

```
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[illegible]

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>kappa-hexatoxin-Hmola
ATGAATACTGCTACAGGTTTCATCGTTCCTTTGGTGTTRGCGACAGTCATCGGAGGCATTGAAGCA-----GGA-----GAATCTGATATGAGAAAAGACGTCATGGGATTA---TTTCGCCGA---
ACTATTTGCACTGGAGCCGACAGACCGTGCGCAGCGTGCTGC---CCGTGCTGCCCAGGGACCTCGTGTC-----CAAGGGCCAGAATCAAACWGTATTTCTTAT--TGCAGGAACGAC-----