

**Supplementary Figure S2:** Alignment of the K2 preprotoxins from different M dsRNAs. Amino acid substitutions are highlighted.

ScV_M2_L2226	1	-----SLVQDELTLGEPATQARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_EC1118	1	-----SLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_2323	1	-----SLVQDELTLGEPATQARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_QA23	1	-----SLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_U43	1	-----SLVQDELTLGEPATQARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_VL1	1	-----SLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_X5	1	-----SLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_FX10	1	-----SLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_VR5	1	-----SLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_PDM	1	-----SLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
ScV_M2_EZ44	1	-----SLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
Scv-M2 (X54154)	1	-----SLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
Scv-M2 (X56604)	1	-----SLVQDELTLGEPATQARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSKAV
Scv-M2-4	1	-----SLVQDELTLGEPATQARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
K2toxin (CAA38093)	1	MKETTTSLVQDELTLGEPATRARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSNAV
K2toxin (CAA39941)	1	MKETTTSLVQDELTLGEPATQARMCVRLLRFFIGLTITAFIIAACIIKSATGGSGYSSKAV

ScV_M2_L2226	55	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_EC1118	55	AVRGEVDTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_2323	55	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_QA23	55	AVRGEVDTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_U43	55	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_VL1	55	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_X5	55	AVRGEVDTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_FX10	55	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_VR5	55	AVRGEVDTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_PDM	55	AVRGEVDTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
ScV_M2_EZ44	55	AVRGEVDTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
Scv-M2 (X54154)	55	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
Scv-M2 (X56604)	55	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
Scv-M2-4	55	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
K2toxin (CAA38093)	61	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY
K2toxin (CAA39941)	61	AVRGEADTPSTIVGQLVERGGFQAWAVGAGIYLFAKIAYDTSKVTAAVCNPEALIAITSY

ScV_M2_L2226	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_EC1118	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_2323	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_QA23	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_U43	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_VL1	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_X5	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_FX10	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_VR5	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_PDM	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
ScV_M2_EZ44	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
Scv-M2 (X54154)	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
Scv-M2 (X56604)	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
Scv-M2-4	115	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
K2toxin (CAA38093)	121	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL
K2toxin (CAA39941)	121	VAYAPTLGAGAYVIGAMSGAMSAGLALYAGYKGWQWGGPGGMAEREDVASFYSPLLNNTL

ScV_M2_L2226	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_EC1118	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_2323	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_QA23	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_U43	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_VL1	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_X5	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_FX10	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_VR5	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_PDM	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
ScV_M2_EZ44	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
Scv-M2 (X54154)	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
Scv-M2 (X56604)	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
Scv-M2-4	175	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT
K2toxin (CAA38093)	181	YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT

K2toxin (CAA39941) 181 YVGGDHTADYDSELATILGSVYNDVVHLGVYYDNSTGIVKRDSRPSMISWTVLHDNMMIT

ScV_M2_L2226	235	SYHRPDQLSAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_EC1118	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_2323	235	SYHRPDQLSAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_QA23	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_U43	235	SYHRPDQLSAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_VL1	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_X5	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_FX10	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_VR5	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_PDM	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
ScV_M2_EZ44	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
Scv-M2 (X54154)	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
Scv-M2 (X56604)	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
Scv-M2-4	235	SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
K2toxin (CAA38093) 241		SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC
K2toxin (CAA39941) 241		SYHRPDQLGAAATAYKAYATNTTRVGKRQDGEWVSYSVYGENVDYERYPVAHLQEEADAC

ScV_M2_L2226	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_EC1118	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_2323	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_QA23	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_U43	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_VL1	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_X5	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_FX10	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_VR5	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_PDM	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
ScV_M2_EZ44	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
Scv-M2 (X54154)	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
Scv-M2 (X56604)	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
Scv-M2-4	295	YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
K2toxin (CAA38093) 301		YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD
K2toxin (CAA39941) 301		YESLGNMITSQVQPCTQRECYAMDQKVCAAVGFSSDAGVNSAMVGEAYFYAYGGVDGECD

ScV_M2_L2226	355	S-
ScV_M2_EC1118	355	S-
ScV_M2_2323	355	S-
ScV_M2_QA23	355	S-
ScV_M2_U43	355	S-
ScV_M2_VL1	355	S-
ScV_M2_X5	355	S-
ScV_M2_FX10	355	S-
ScV_M2_VR5	355	S-
ScV_M2_PDM	355	S-
ScV_M2_EZ44	355	S-
Scv-M2 (X54154)	355	S-
Scv-M2 (X56604)	355	S-
Scv-M2-4	355	S-
K2toxin (CAA38093) 361		SG
K2toxin (CAA39941) 361		SG