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Supporting Information

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Isolation, Amino Acid Sequence and Biological Activities of Novel Long-Chain Polyamine-Associated Peptide Toxins from the Sponge *Axinyssa aculeata*

Satoko Matsunaga,^[a] Mitsuru Jimbo,^[b] Martin B. Gill,^[c] L. Leanne Lash-Van Wyhe,^[c] Michio Murata,^[d] Ken'ichi Nonomura,^[d] Geoffrey T. Swanson,^[c] and Ryuichi Sakai*^[a]

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Figure S1. Dose-response curve of ACUs for mice upon i.c.v. injection





Figure S2. ¹H NMR spectrum for ACU-A in D_2O (750 MHz)

Figure S3. ¹H NMR spectrum for ACU-B in D₂O (750 MHz)



Figure S4. MALDI-TOF MS/MS spectrum for fragment A (ACU-A) and A' (ACU-B) $\,$



precursor ion: *m/z* 1126

Figure S5. MALDI-TOF MS/MS spectrum for fragment B (ACU-A) and B' (ACU-B)







Figure S7. MALDI-TOF MS/MS spectrum for fragment D







Figure S9. COSY spectrum for fragment E in D_2O (600 MHz)





Figure S10. Membrane permeabilizing activity of ACU-A $\,$



Figure S11. Negative ion MALDI-TOFMS data (Lower moleular region) for ACU-A, B, and LCPA $_9$ showing presences of sulfate ion at m/z 96.96