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Supplementary Information

Formation of Lamellar Micelle-like Oligomers and Membrane Disruption Revealed by the Study of Short Peptide hIAPP₁₈₋₂₇

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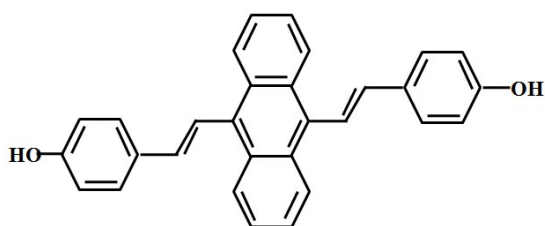


Fig. S1 Structure of 9,10-bis (4-hydroxystyryl) anthracene.

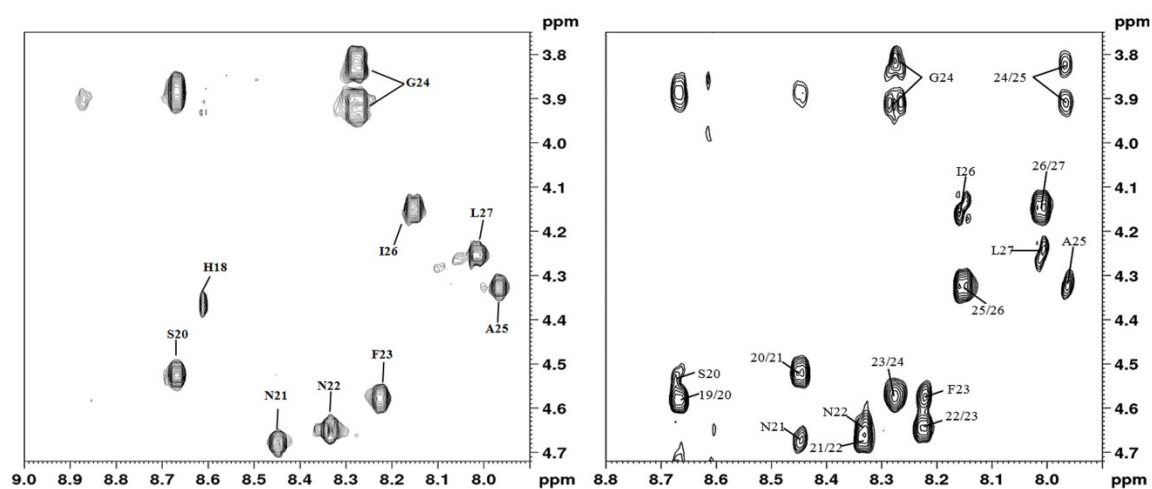


Fig. S2 The HN-H α regions of the TOCSY (left) and ROESY (right) spectra of the sonicated hiAPP₁₈₋₂₇ in deionized water (pH 4.5) at 25 °C.

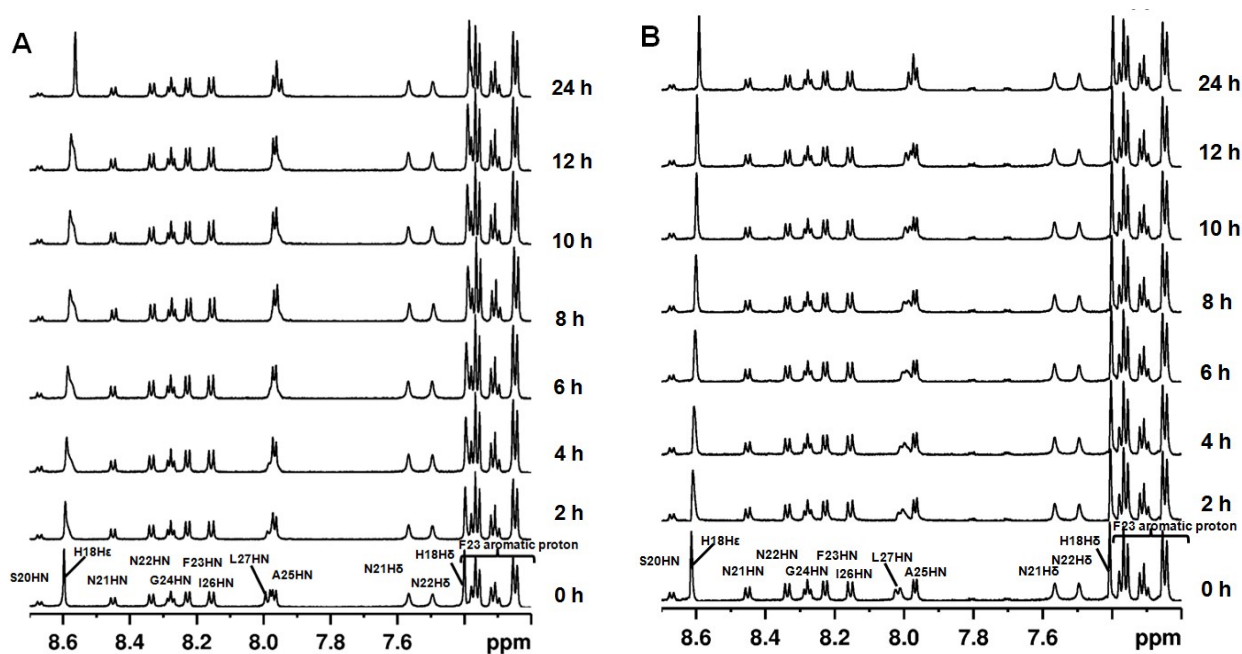


Fig. S3 ^1H NMR spectra of non-sonicated (A) and sonicated (B) hiAPP₁₈₋₂₇ in deionized water at the indicated time points (0-24 hours).

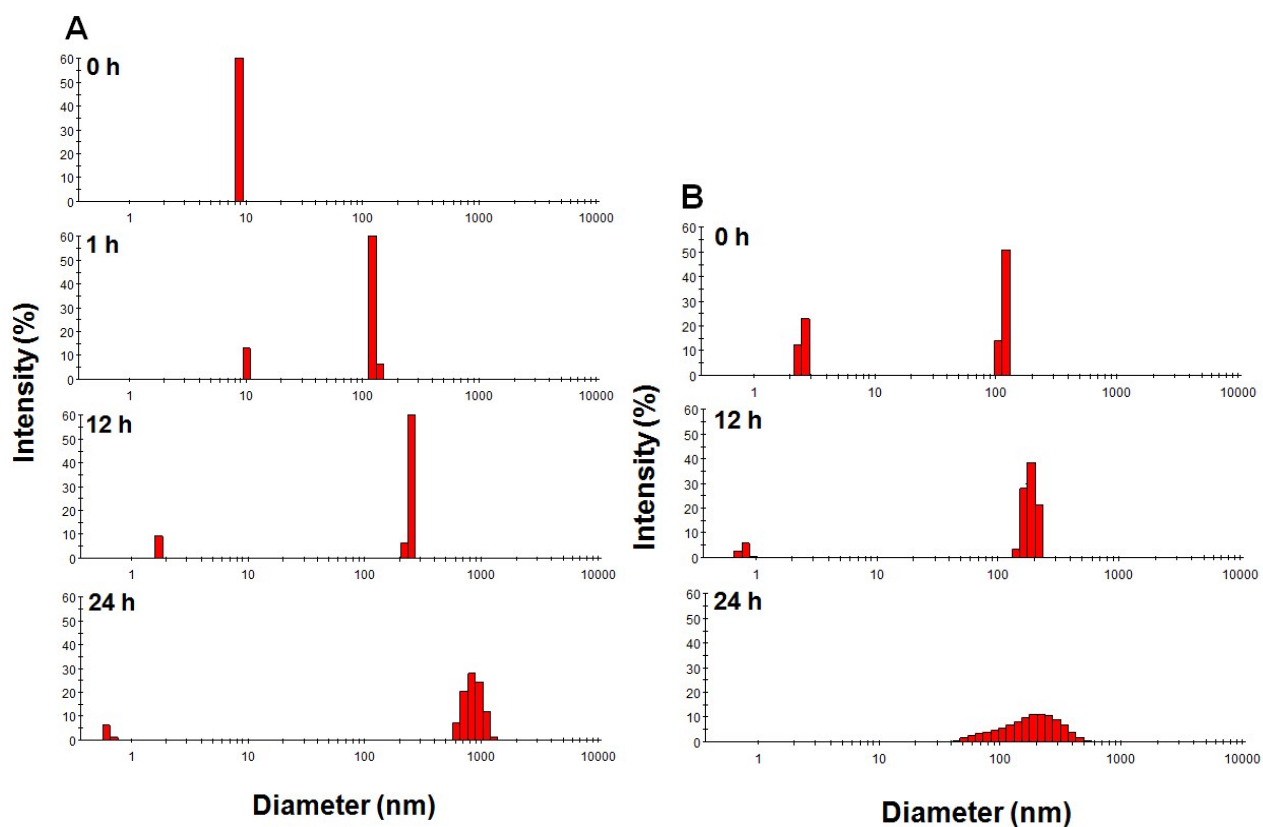


Fig. S4 DLS results of non-sonicated hIAPP₁₈₋₂₇ incubated in deionized water for 0, 1, 12 and 24 h (A) and DLS results of sonicated hIAPP₁₈₋₂₇ incubated in deionized water for 0, 12 and 24 h after 1 h pre-treatment of sonication (B).

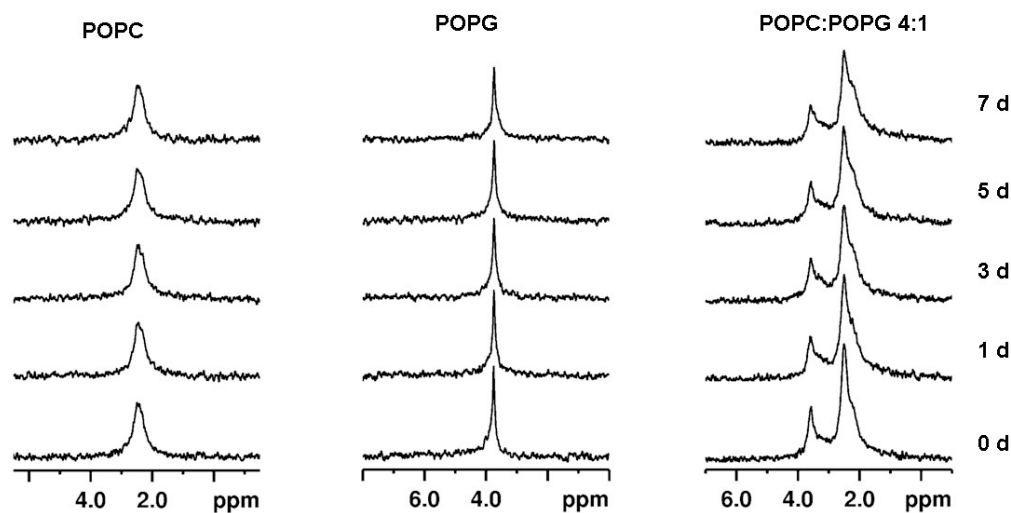


Fig. S5 ³¹P NMR spectra of POPC, POPG and POPC/POPG 4:1 SUVs in Tris/HCl buffer (pH 7.4) at various incubation time (0-7 days).

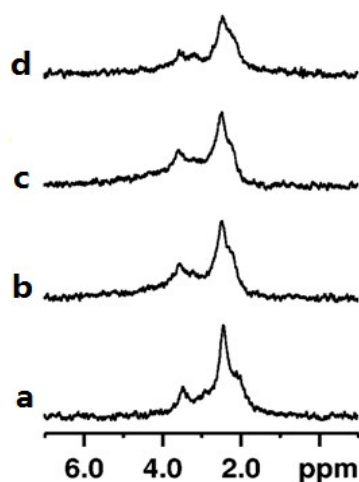


Fig. S6 Time dependence of ^{31}P NMR spectra of POPC/POPG (4:1) SUVs in Tris/HCl buffer (pH 7.4) containing sonicated hIAPP₁₈₋₂₇ that was incubated in deionized water for five days (five-day-incubated peptide) prior to being added into the SUV solution. a: SUVs alone; b-d: the mixture of SUVs and five-day-incubated peptide measured immediately after the preparation, incubation for 1 day and 5 days, respectively).

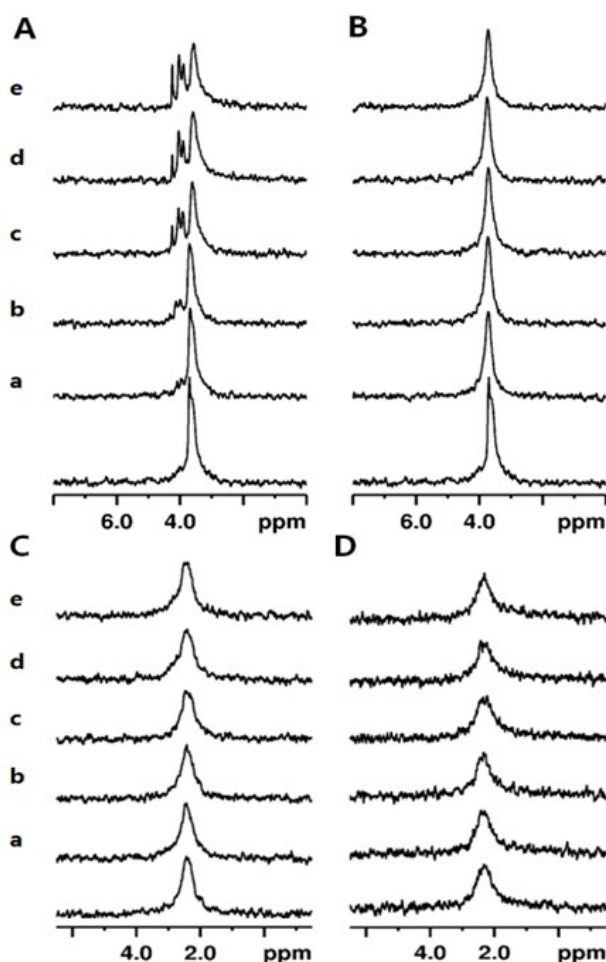


Fig. S7 (A, B) ^{31}P NMR spectra of POPG SUVs alone and in the presence of sonicated (A) and non-sonicated (B) hIAPP₁₈₋₂₇ at various incubation time (a: 0 day; b: 1 day; c: 3 day; d: 5 day; e: 7 day). (C, D) ^{31}P NMR spectra of POPC SUVs alone and in the presence of sonicated (C) and non-sonicated (D) hIAPP₁₈₋₂₇ at various incubation time (a: 0 day; b: 1 day; c: 3 days; d: 5 days; e: 7 days). Tris/HCl buffer at pH 7.4 was used in the experiments.

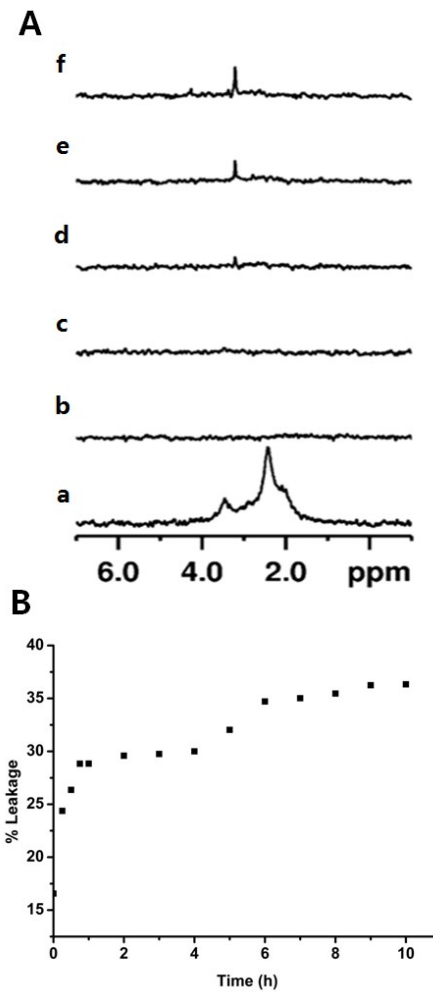


Fig. S8 (A) ^{31}P NMR spectra of POPC/POPG (4:1) SUVs in the absence (a) and in the presence of hiAPP₁₋₃₇ at various incubation time (b: 0 day; c: 1 day; d: 3 days; e: 5 days; f: 7 days). (B) Time dependence of the leakage of calcein in POPC/POPG (4:1) LUVs induced by hiAPP₁₋₃₇. Tris/HCl buffer at pH 7.4 was used in the experiments.

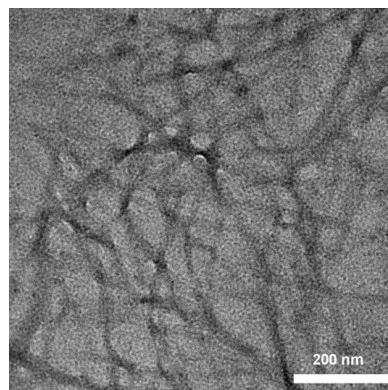


Fig. S9 TEM image of hiAPP₁₈₋₂₇ incubated in deionized water at pH 5.6 for 6 h.