Electronic supplementary information (ESI)

Cooperative dissolution of peptidomimetic vesicles and amyloid β fibrils

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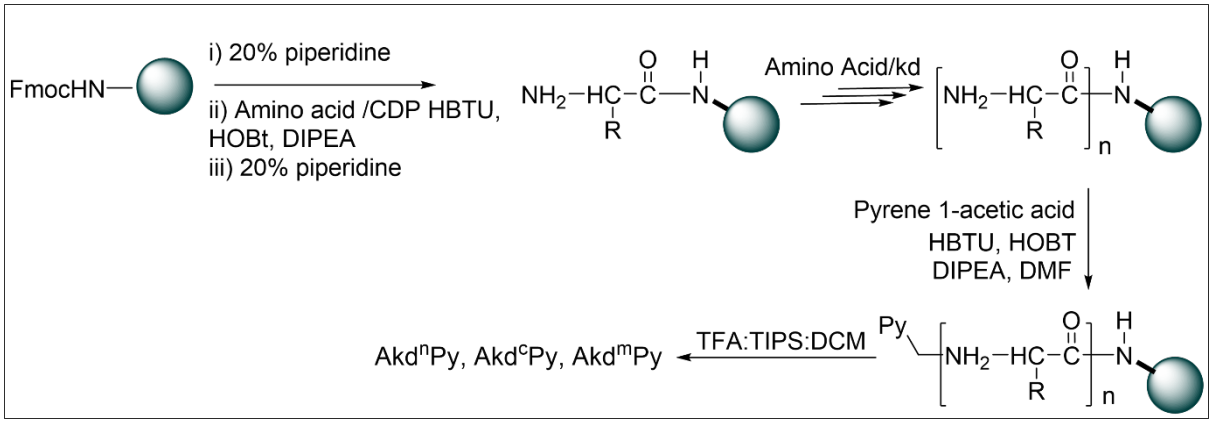


Scheme S1 General synthetic route for peptidomimetic amphiphiles (Akd^{c}Py, Akd^{m}Py, and Akd^{n}Py).

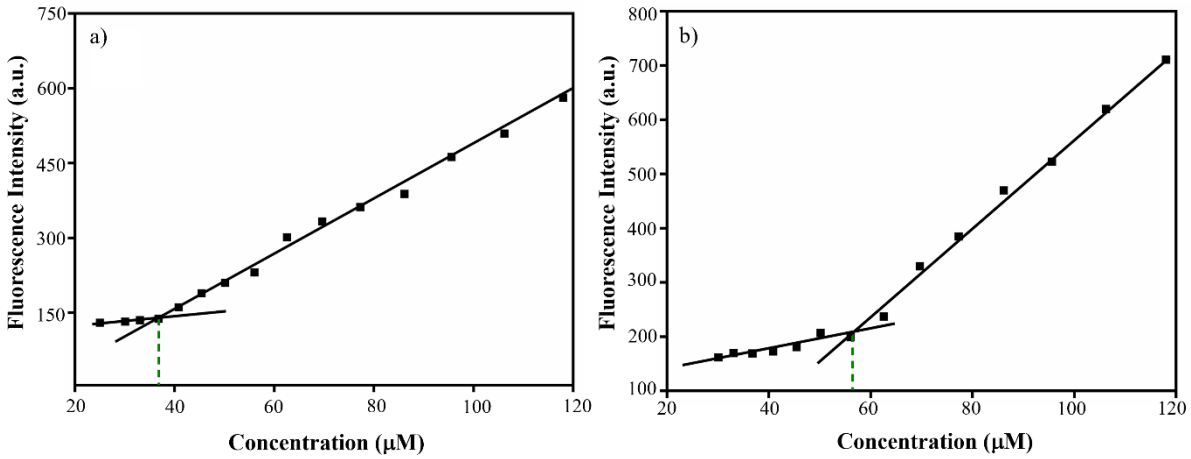


Fig. S1 Plot of fluorescence intensity against concentration of a) Akd^{m}Py and b) Akd^{c}Py at 25 °C for determination of CAC.

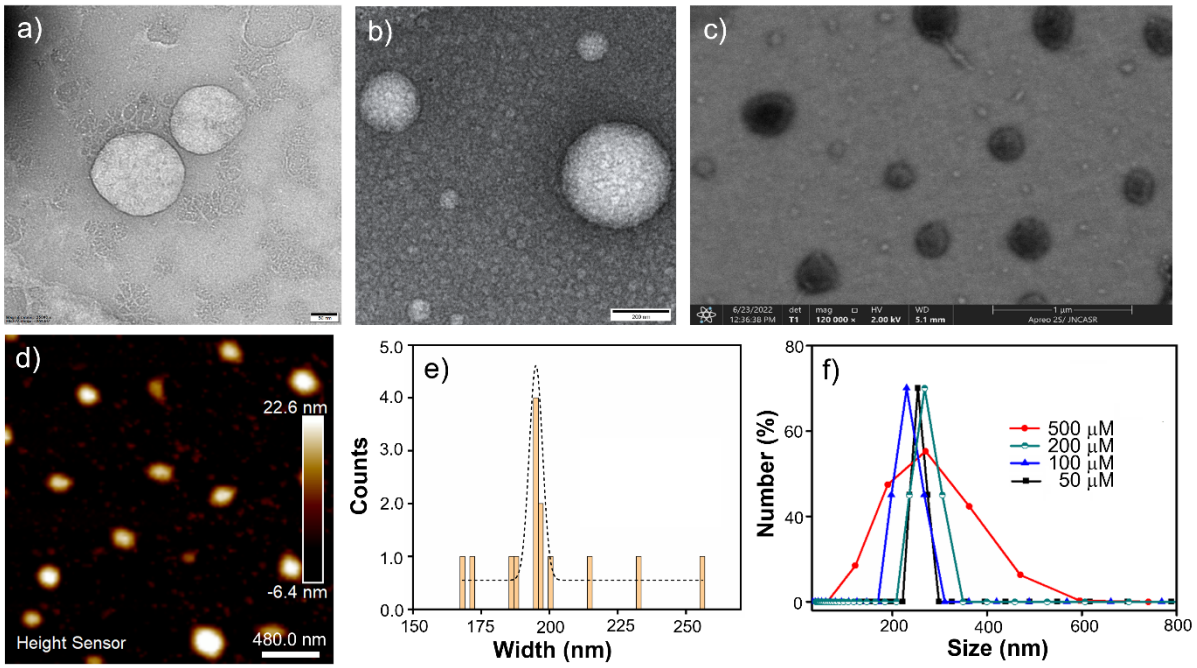


Fig. S2 a) TEM image, b) high-resolution TEM image, c) FESEM image, and d) AFM image of molecular assembly architectures (vesicles) formed by Akd^{c}Py ([Akd^{c}Py] = 100 μM); e) Size distribution histogram from AFM with a Gaussian fit; f) Concentration-dependent size distribution profile obtained from DLS for Akd^{c}Py vesicle.

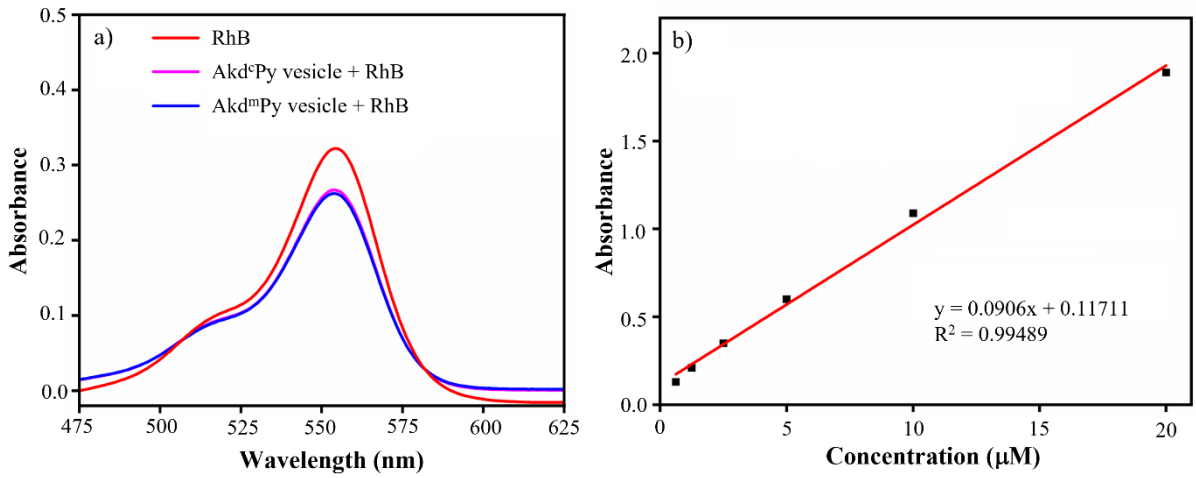


Fig. S3 a) UV-vis spectra of RhB entrapped within Akd^{m}Py and Akd^{c}Py vesicles and only RhB in water; b) Calibration plot of RhB in water (λ_{max} = 554 nm, absorbance versus concentration).

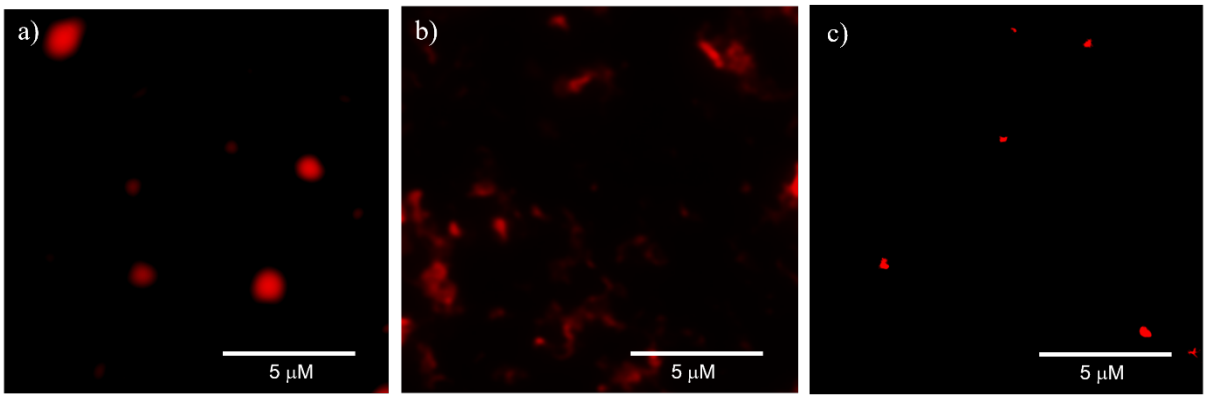


Fig. S4 Fluorescence microscopy images of a) RhB entrapped within Akd^{c}Py vesicles, b) RhB entrapped within Akd^{c}Py vesicles after treating with triton X-100 on Akd^{c}Py vesicle and c) RhB entrapped within Akd^{m}Py vesicles after treating with triton X-100 (Fluorescence microscopy image of RhB entrapped within Akd^{m}Py vesicles is shown in Fig. 4a in main manuscript).

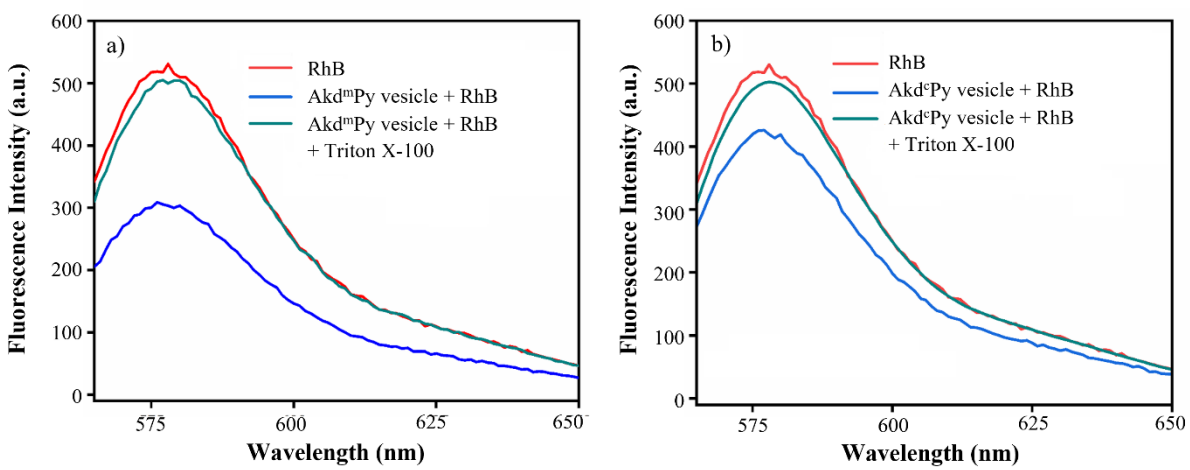


Fig. S5 Fluorescence emission spectra of only RhB (40 μM), and RhB entrapped (40 μM) within a) Akd^{m}Py vesicle (100 μM) and b) Akd^{c}Py vesicles (100 μM), after treating with triton X-100 (0.5% v/v).

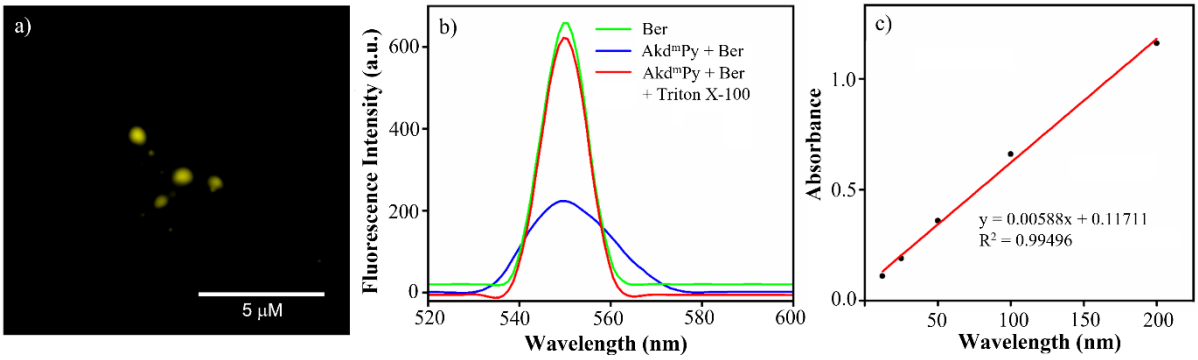


Fig. S6 a) Fluorescence microscopy image of Ber encapsulated Akd^{m}Py vesicles; b) Fluorescence spectra of only Ber and Ber entrapped within Akd^{m}Py vesicles, after treating with triton X-100; c) Calibration plot of Ber (λ_{max} = 350 nm, absorbance versus concentration).

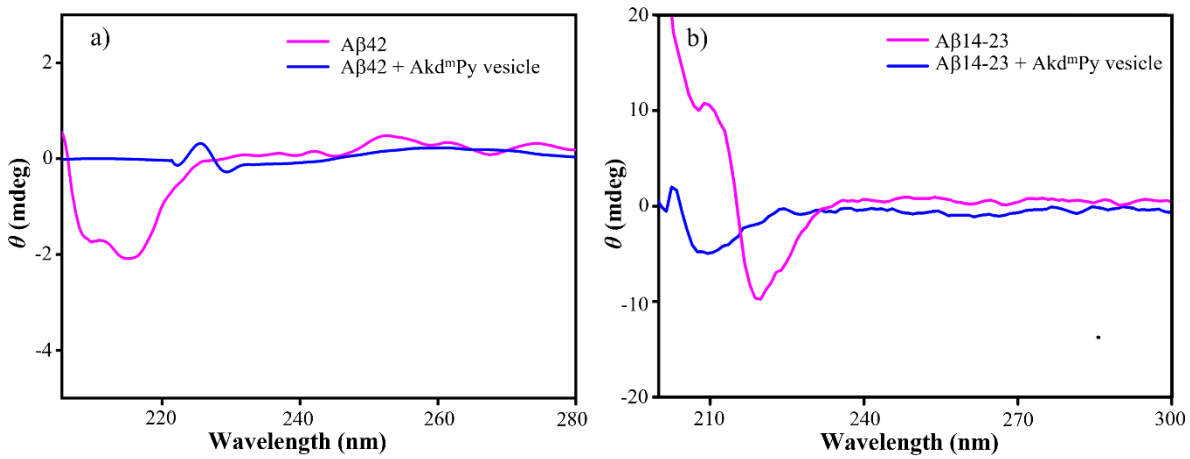


Fig. S7 CD spectra of a) Aβ42 fibrils (10 μM) and b) Aβ14-23 fibrils (10 μM) in the absence and presence of Akd^{m}Py (40 μM) vesicles.

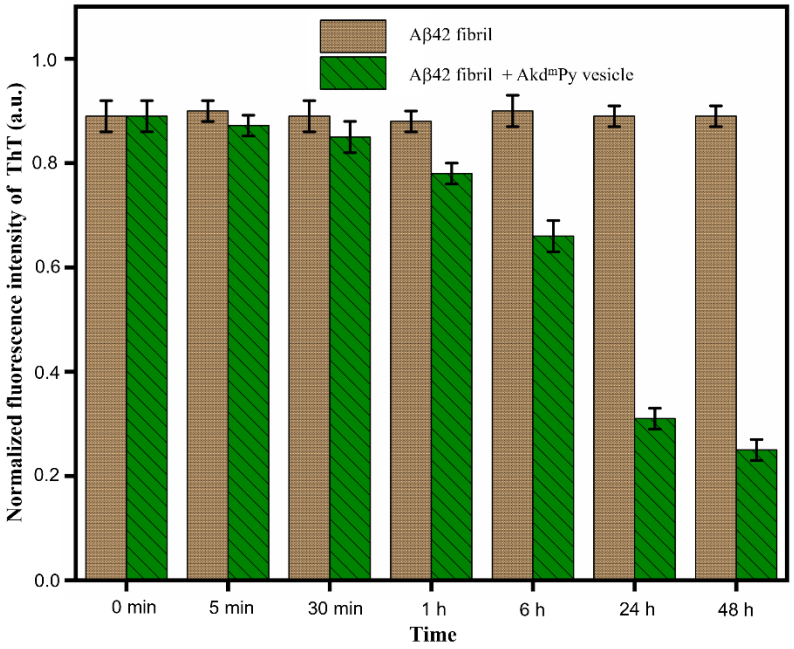


Fig. S8 Time-dependent ThT (20 μM) fluorescence data (λ_{em} = 482 nm) showed dissolution of Aβ42 fibrils (10 μM) in the presence of Akd^{m}Py vesicle (40 μM). Percent errors are within ±5% in triplicate experiments.

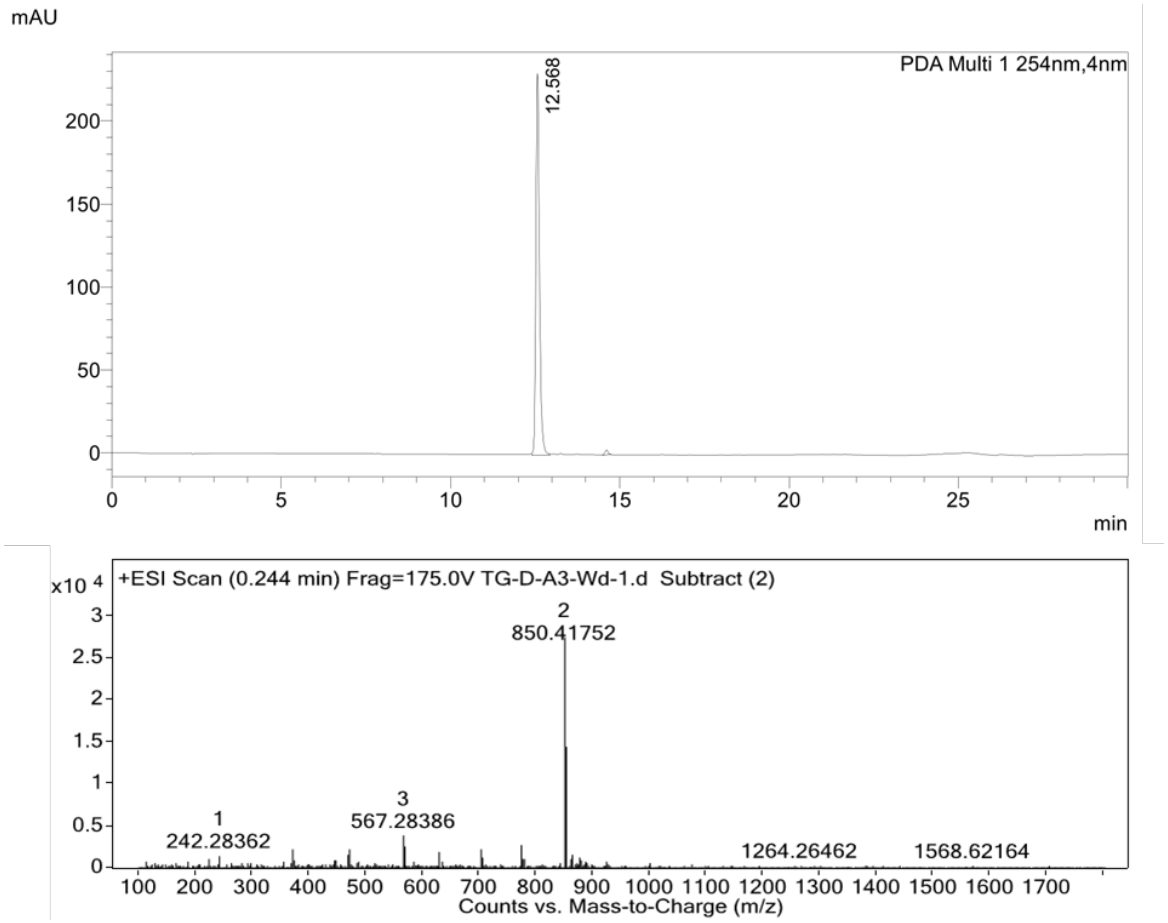
Table S1. Characterizations of the peptidomimetics by HPLC.

Peptidomimetics	**HPLC gradient**	**Flow rate** (ml/min)	**Retention time** (R_t)	**Purity** (%)	**Column**
Akd^{n}Py	0-98 % MeCN (0.1% TFA) in H2O (0.1% TFA) for 30 min	8	17.566	>99	Reverse-phase semi-preparative HPLC with a C18 column at 40 °C
Akd^{m}Py	0-98 % MeCN (0.1% TFA) in H2O (0.1% TFA) for 25 min	8	12.568	>99	
Akd^{c}Py	0-98 % MeCN (0.1% TFA) in H2O (0.1% TFA) for 25 min	8	12.515	>99	

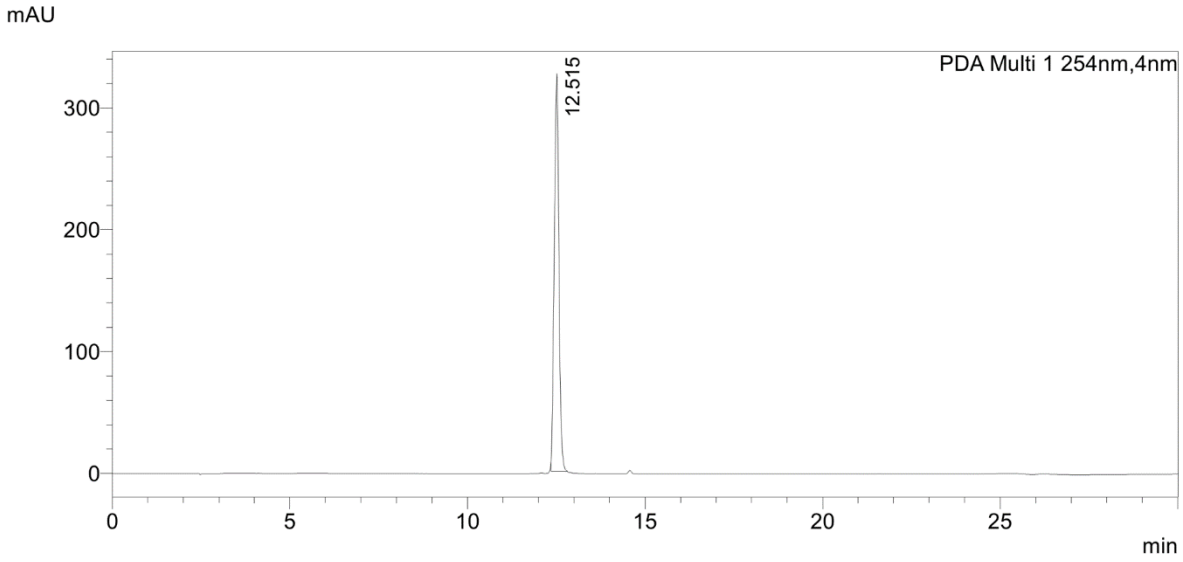
Table S2. Characterizations of the peptidomimetics by HRMS.

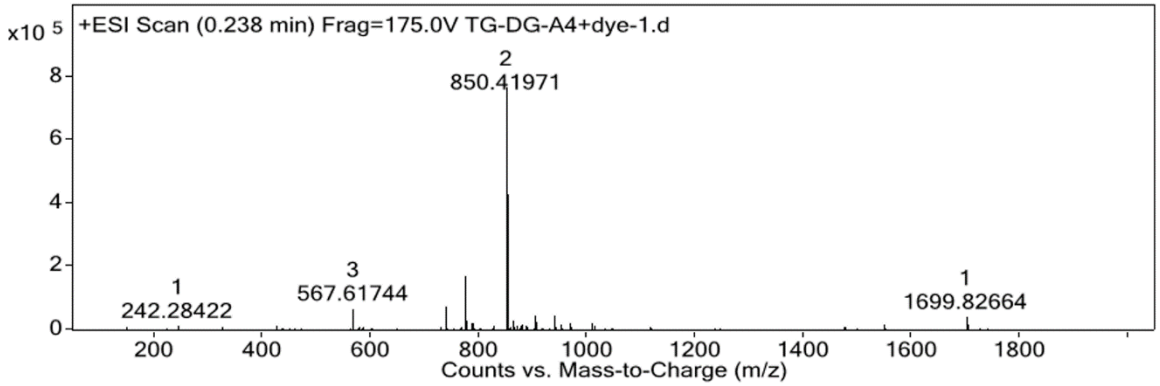
Name	Sequence	Exact mass	Observed mass HRMS
Akd^{n}Py	Py-kd-His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Asp	1698.8195	850.41971 [M/2+H]+ 567.61744 [M/3+H]+
Akd^{m}Py	Py- His-Gln-Lys-Leu-Val-kd-Phe-Phe-Ala-Glu-Asp	1698.8195	850.41752 [M/2+H]+ 567.28386 [M/3+H]+
Akd^{c}Py	Py- His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Asp-kd	1698.8195	850.91545 [M/2+H]+

HPLC chromatogram and HRMS of Akd^{c}Py



HPLC chromatogram and HRMS of Akd^{m}Py





HPLC chromatogram and HRMS of Akd^{n}Py