Supporting information

Self-assembled peptide nanofibrils designed to release membrane lysing antimicrobial peptide

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List of Supporting information

Table S1 MIC of the designed peptides

Strains	Gram stain	MIC (μg mL^{-1})					
		$K_3(FA)_4K_3$	$K_6(FA)_4$	Boc-F-γ4-FV-OMe[1]	KRLFKEFLFSLRKY[2]	DLP-PH/DLP-PHc[3]	cHABPI-AMP[4]
Concentration CFU mL^{-1}		2~7 × 10^6	2~7 × 10^6	2~7 × 10^6	2~7 × 10^6	2~7 × 10^6	2~7 × 10^6
E.coli	-	63	125	250	125	32/128	32
Salmonella	-	32	63				

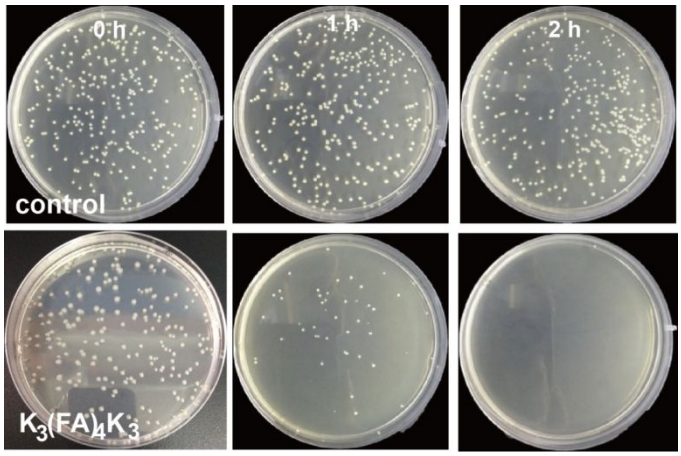

Figure S1 Colonies formed of *E. coli* after treated with peptide $K_3(FA)_4K_3$ (63 μg mL^{-1})

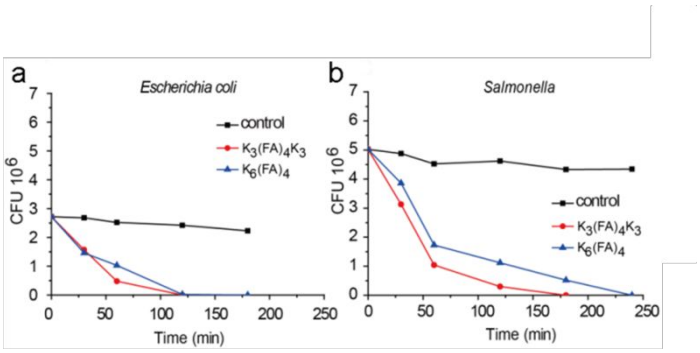

Figure S2 Antimicrobial activity of designed peptide $K_3(FA)_4K_3$ (1 × MBC) and $K_6(FA)_4$ (1 × MBC) against pathogens cells: (a) The cells viability of *E. coli*, (b) Salmonella in case of peptide $K_3(FA)_4K_3$ (1 × MBC); the untreated bacteria cells are shown as control

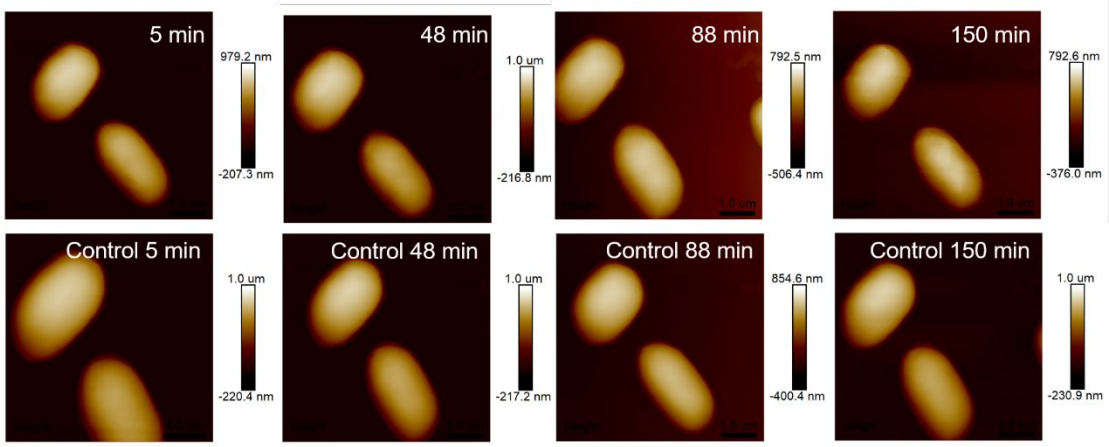

Figure S3. The height of bacteria *E. coli*. by *in-situ* AFM analysis treated by designed peptides (up panel)and without treatment as control (down panel) .

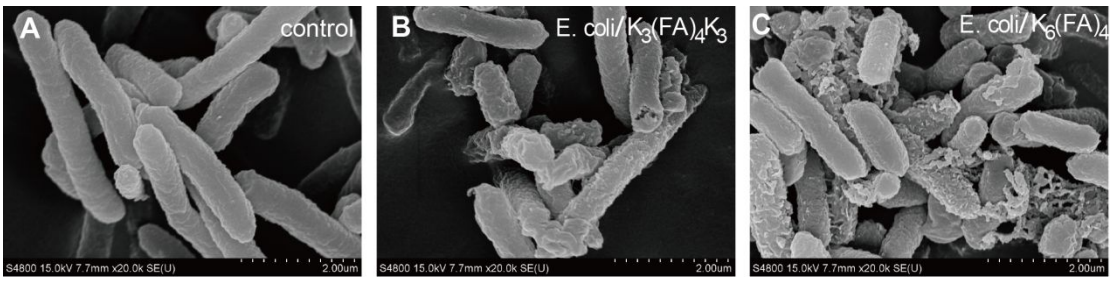

Figure S4. SEM images of bacterial morphology treated by designed peptides. (A) *E. coli* treated by PBS (B) *E. coli* treated by $K_3(FA)_4K_3$ (C) *E. coli* treated by $K_6(FA)_4K_3$

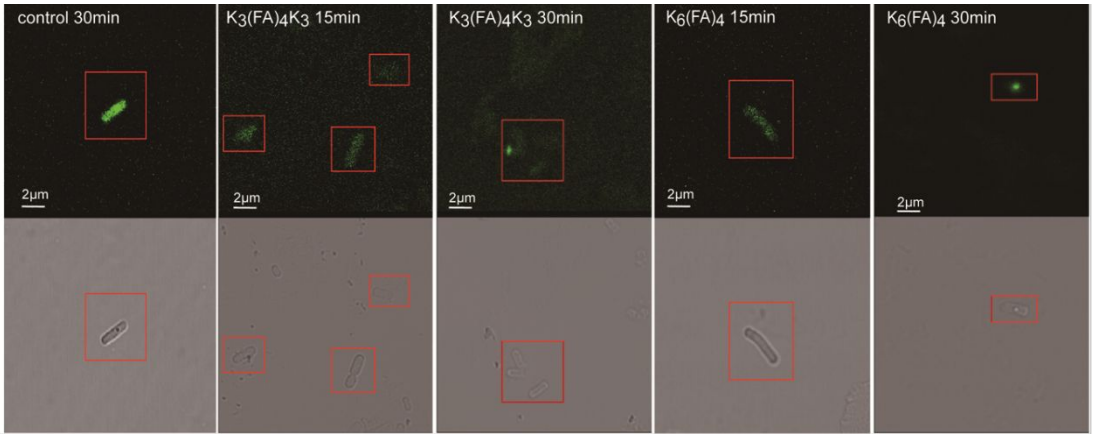

Figure S5 The calcium imaging indicated by Fluo3-AM probe inside of the E. coli. with and without the treatment of peptides. The depleted intensity of fluorescence implied the calcium efflux.

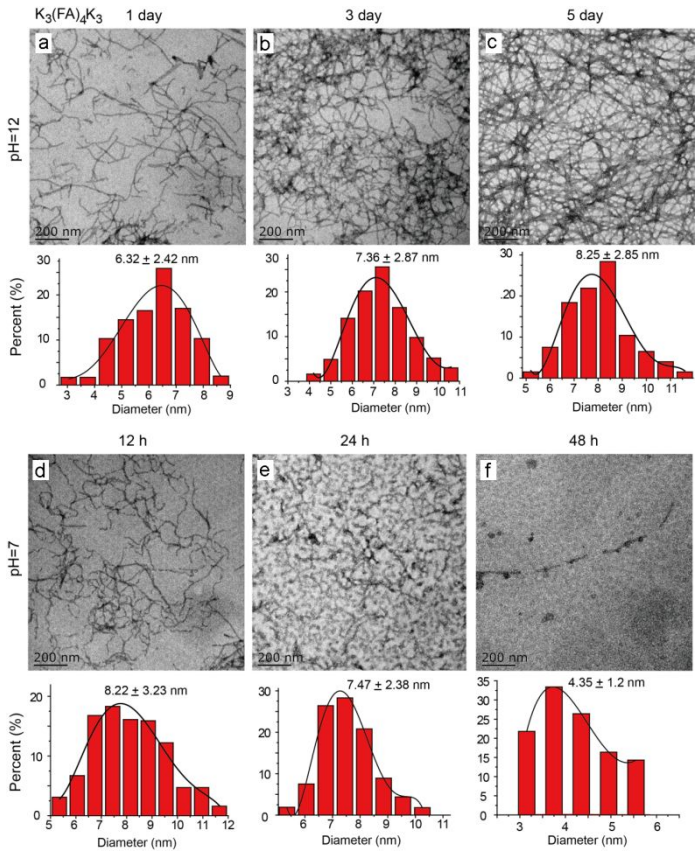

Figure S6 Self-assembly and disassembly structure of the peptide $K_3(FA)_4K_3$ (500 μg mL^{-1}) by TEM, (a) incubation for 1 Day; (b) incubation for 3 Days; (c) incubation for 5 Days at pH=12; (d) continue to incubate for 12 h; (e) incubate for 24 h; (f) incubate for 48 h at pH=7

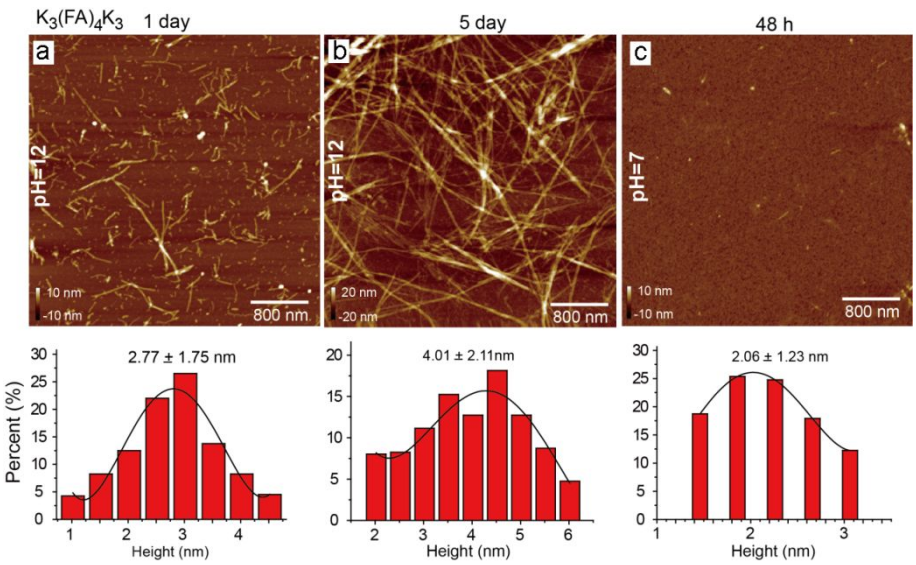

Figure S7 Self-assembly and disassembly structure of the peptide $K_3(FA)_4K_3$ (500 μg mL^{-1}) by AFM, (a) incubation for 1 Day; (b) incubation for 5 Days; (c) continue to incubate for 48 h at pH=7

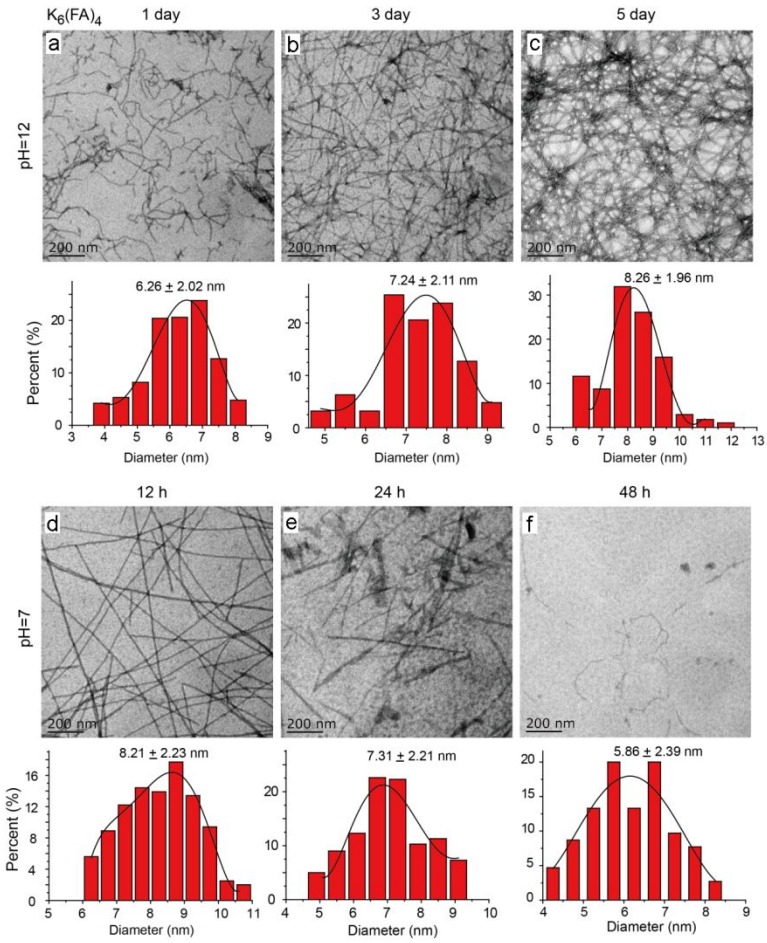

Figure S8 Self-assembly and disassembly structure of the peptide $K_6(FA)_4$ (500 μg mL^{-1}) by TEM, (a) incubation for 1 Day; (b) incubation for 3 Days; (c) incubation for 5 Days at pH=12; (d) continue to incubate for 12 h; (e) incubate for 24 h; (f) incubate for 48 h at pH=7

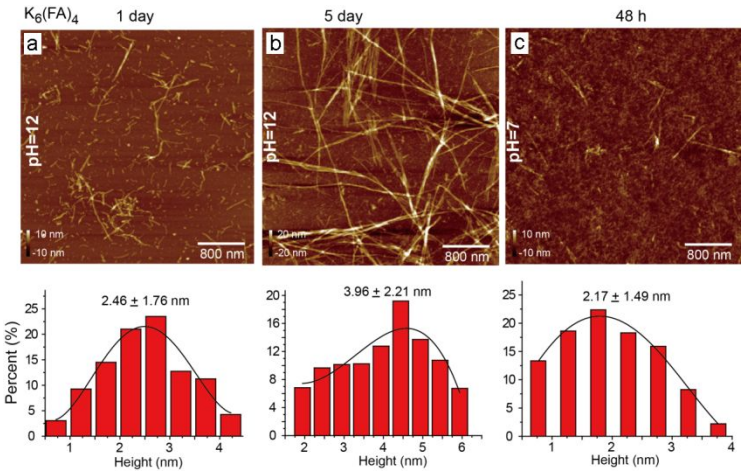

Figure S9 Self-assembly and disassembly structure of the peptide $K_6(FA)_4$ (500 μg mL^{-1}) by AFM, (a) incubation for 1 day; (b) incubation for 5 days; (c) continue to incubate for 48 h, at pH=7

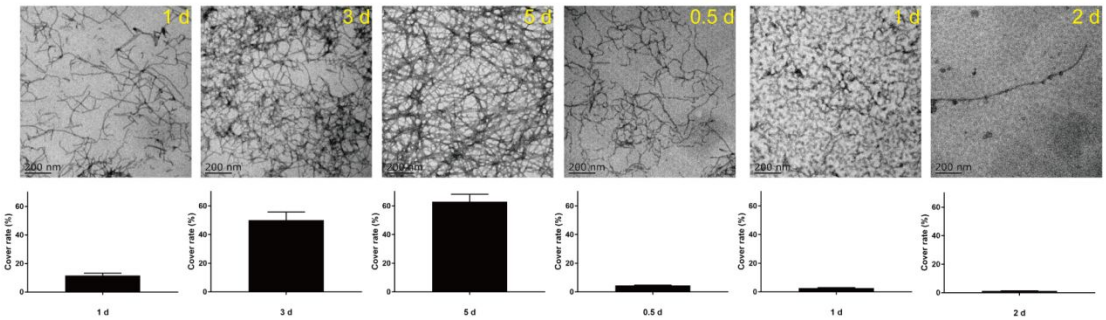

Figure S10 Surface coverage of $K_3(FA)_4K_3$ peptide fibrils in self-assembling and disassembling.

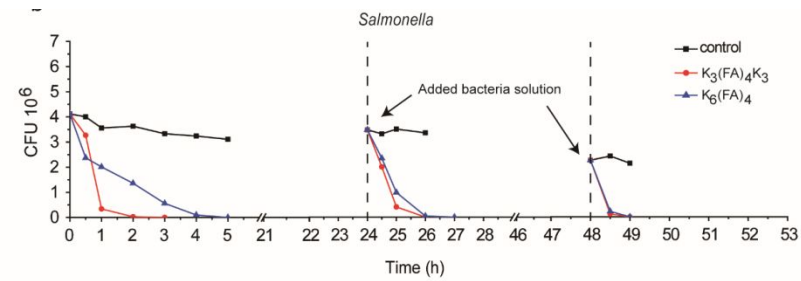

Figure S11. The evaluation of cell viability of bacteria Salmonella treated by two peptide based nanofibrils with twice more injection of bacteria for the exploration of long term bacteriocidal action.

References

1. Shankar, S.; Singh, G.; Rahim, J. U.; Qayum, A.; Sharma, P. R.; Katoch, M.; Rai, R., Investigation of α / γ hybrid peptide self - assembled structures with antimicrobial and antibiofilm properties. Journal of Peptide Science 2020, 26, e3243, 4-5.

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