Table S1. pH-sensitive peptide-based hydrogels designed previously.

peptide	G′ (pH), wt%	Self-healing	Antimicrobial properties	Potential application	cytocompatibility	Reference
CKIKIKIK–I^{D}PPT–KIOIKIKC– NH_2	1500 Pa (7.4), 1.5 wt%	Yes	–	Anti-tumor drug delivery	Yes	[1]
EKAIQIAF	1500 Pa (7.4), 2 wt %	–	–	Anti-tumor drug delivery	Yes	[2]
SSSGGK*GGHHH Where * = palmitoyl tail	3500 Pa (9.0), 0.2 wt%	–	–	3D tissue scaffold	Yes	[3]
Lauryl-FFAGHH	–	–	–	–	–	[4]
FEFEFRFK	700 Pa (7.4), 2 wt%	–	–	Anti-tumor drug delivery	Yes	[5]
Nap-FEFK	10000 Pa (7), 2.6 wt%	Yes	–	Cell-supporting scaffold	Yes	[6]
VKVKVOVK–V^{D}PPT–KVEVKVKV	4000 Pa (7.4), 1.5 wt%	Yes	–	Anti-tumor drug delivery	Yes	[7]
Palmitoyl- VVAEEE	–	–	–	Anti-tumor activity	Yes	[8]
VKVKVKVK-V^{D}PPT-KVKVKVKV	1200 Pa (9), 2 wt%	–	–	–	–	[9]
LKELAKV LHELAKL VKEALHA	350 Pa, 0.35 wt%	–	–	Tissue engineering	Yes	[10]
(KIGAKI)3-TDPPG-(KIGAKI)3	13-20 Pa at 20°C, 0.5 wt%	–	Yes	Tissue engineering	–	[11]
FHHFRFRFHHF	~50,000 Pa (8), 1 wt%	Yes	Yes	Wound healing, drug delivery	Yes	This work

– Not shown

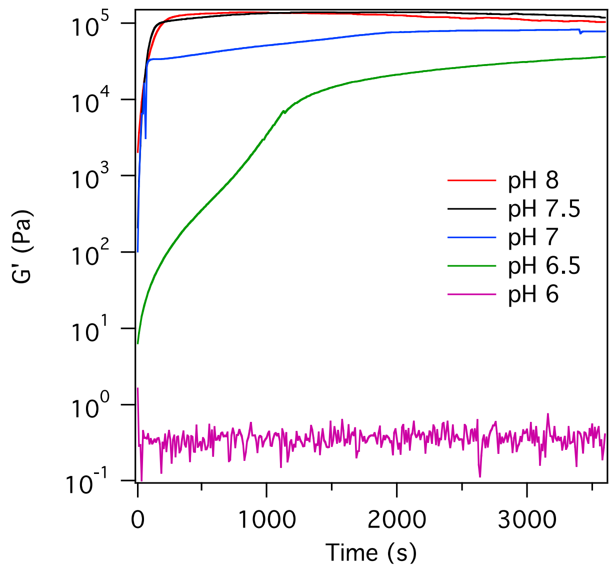

Figure S1. Rheology runs on FHHF-K peptide showing traces at different pH values. The hydrogel samples were assembled to make a final 1 wt% peptide in buffer 50 mM Hepes and 50 mM MOPS (pH 6.0/6.5/7.0/7.5/8.0) and running at 37°C for 1 hr.

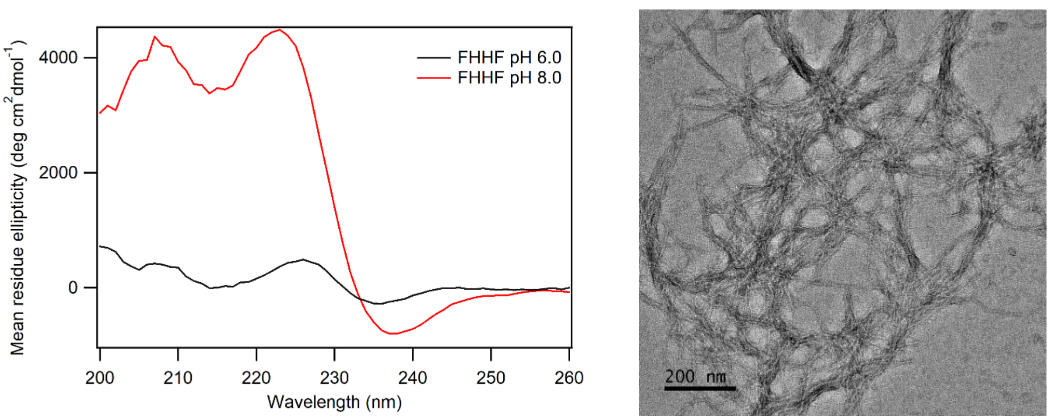

Figure S2. Peptide FHHF-11 assembles into fibrils at pH 8 as can be seen by CD (left) and TEM (right). Left figure shows CD spectra of FHHF-11 peptide in buffer mixture at pH 6 and 8. The positive signal at 210-230 nm is due to exciton coupling of Phe residues.[12-15] Samples were prepared by incubating FHHF-11 peptide (3 mM, 0.25 wt%) in buffer (12.5 mM HEPES 12.5 mM MOPS, pH 6 and 8) overnight at 37°C. CD spectra were collected with the pathlength of 0.1 mm and 10 scans for each sample.

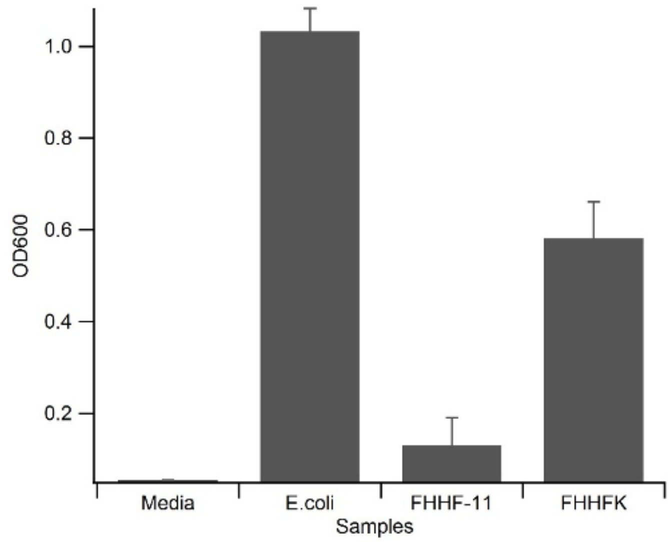

Figure S3. Inhibition of bacterial growth. Hydrogel samples were formed from 1 wt%. All samples except the first one (media) contained *E. coli* culture.

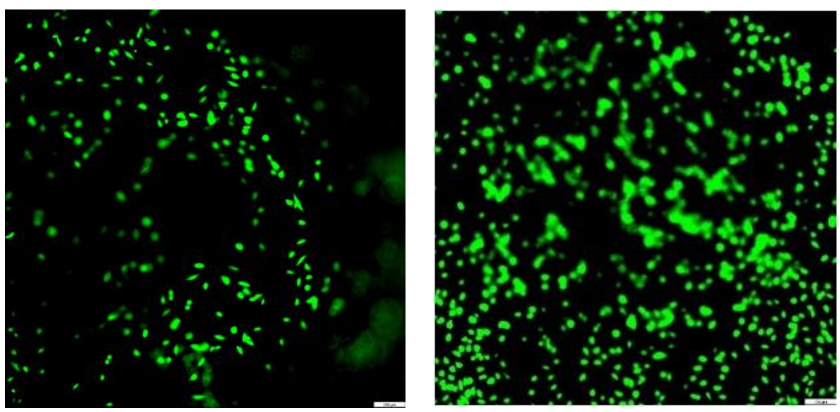

Figure S4. Live/dead assay for the fibroblast cells: fibroblasts on the surface of FHHF-11 hydrogel (left) and its GRGD derivative (right) showing live cells.

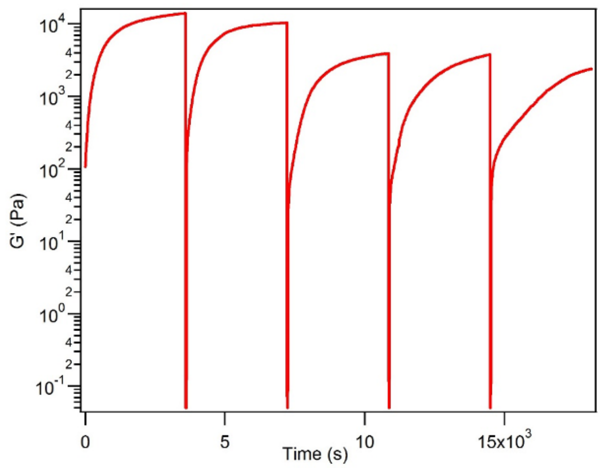

Figure S5. Shear recovery of the FHHF11 hydrogel prepared by mixing 1 wt% peptide FHHF-11 in buffer (50 mM HEPES/50 mM MOPS, pH 7). In each cycle the hydrogel was subjected to 1000% strain at 6.283 rad/s for 30 s at 37°C, followed by an oscillation time sweep experiment (0.2% strain) for 1 hr to check the sample's recovery after shear.

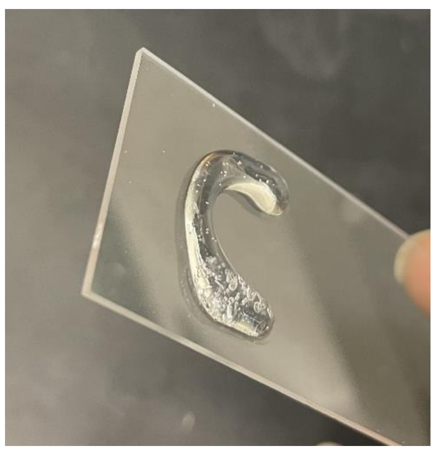

Figure S6. Recovery of hydrogel material after syringe delivery. 1wt% of peptide hydrogel was assembled inside a syringe (900 µl). Hydrogel was assembled by mixing 450 uL of peptide solution in water (2 wt%) with 450 uL of buffer (100 mM Hepes, pH 8) inside a syringe. The mixture was incubated for 15 min at 37°C and then the drawing was made on a glass slide, which was subsequently incubated at 37°C for another 15 min (a beaker with water was placed inside incubator).

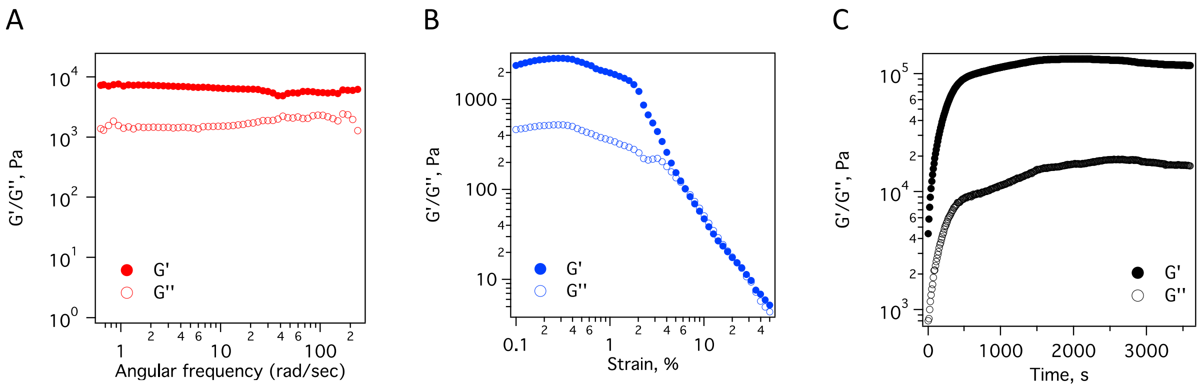

Figure S7. (A) Frequency and (B) strain sweep rheological data collected at 0.2% strain and 6.28 rad/s frequency (1 Hz) on the pre-formed gels. Closed and open symbols represent storage (G′) and loss (G′′) modulus. (C) The hydrogel samples were assembled by mixing 2 wt% peptide stock in water and buffer (100 mM Hepes, pH 8) and incubating at 37˚C for 1 hr.

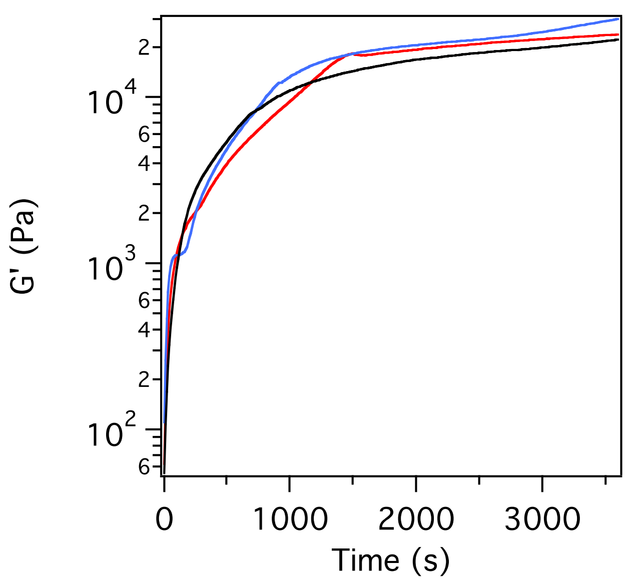

Figure S8. Rheology runs with FHHF-11 peptide at pH 8 without (black) and with Ca(II) (red) and Mg(II) (blue). The hydrogel samples without metal were assembled by mixing 2 wt% peptide stock in buffer (50 mM Hepes, pH 8) and running at 37°C for 1 hr. The hydrogel samples with metal ions were assembled by mixing 2 wt% peptide with 1 eq of metal in water and then the buffer (100 mM Hepes, pH 8) was added and samples analyzed by running at 37˚C for 1 hr.

Table S2. MALDI spectra of peptides used in this work.

Peptide name	Peptide sequence	Expected m/z	Observed m/z	MALDI spectrum
FHHF-11	Ac-FHHFRFRFHHF-$CONH_2$	1656	1656	Figure S9
No-Ac FHHF-11	NH_2-FHHFRFRFHHF-$CONH_2$	1613	1613	Figure S10
COOH FHHF-11	Ac-FHHFRFRFHHF-COOH	1657	1657	Figure S11
FHHF-K	Ac-FHHFKFKFHHF-$CONH_2$	1600	1600	Figure S12
HHF	Ac-HHFRFRFRFHH-$CONH_2$	1663	1660	Figure S13
HFH	Ac-HFHFRFRFHFH-$CONH_2$	1656	1656	Figure S14
FHFH	Ac-FHFHFRFRFHFHF-$CONH_2$	1951	1952	Figure S15
FHHF-GRGD	Ac-FHHFRFRFHHFGRGD-$CONH_2$	2040	2040	Figure S16
W substitutions	Ac-**W**HHFRFRFHHF-$CONH_2$	1695	1695	Figure S17
	Ac-FHHFRFRFHH**W**-$CONH_2$	1695	1695	Figure S18
	Ac-FH**W**FRFRFHHF-$CONH_2$	1705	1705	Figure S19
	Ac-FHHFR**W**RFHHF-$CONH_2$	1695	1695	Figure S20
	Ac-FHHFK**W**KFHHF-$CONH_2$	1638	1638	Figure S21
	Ac-FHHFRF**W**FHHF-$CONH_2$	1686	1686	Figure S22
	Ac-FHHF**W**FRFHHF-$CONH_2$	1686	1686	Figure S23
AzAla substitutions	Ac-FHHFR(**AzAla**)RFHHF-$CONH_2$	1705	1705	Figure S24

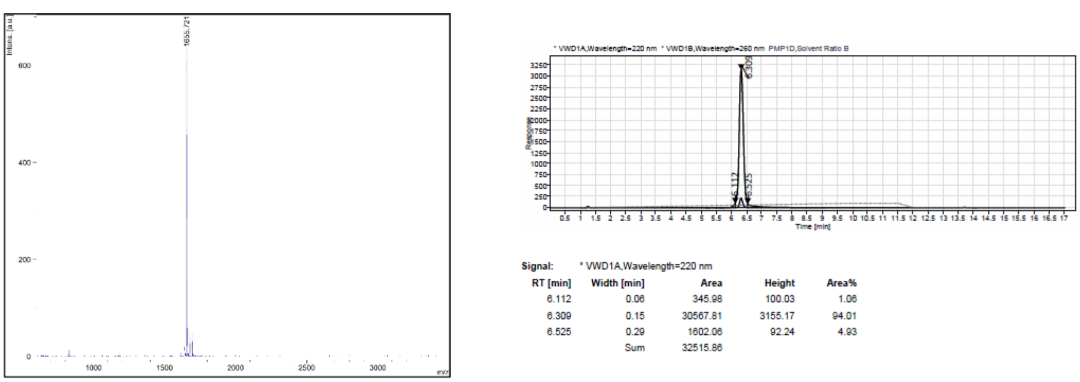

Figure S9. MALDI (left) and HPLC chromatogram (right) spectra of FHHF-11.

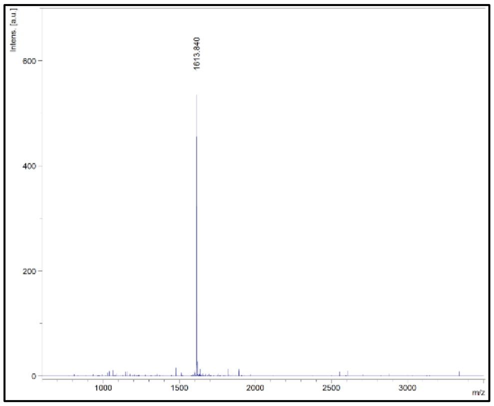

Figure S10. MALDI spectrum of No-Ac FHHF-11 (NH_2-FHHFRFRFHHF-$CONH_2$) peptide.

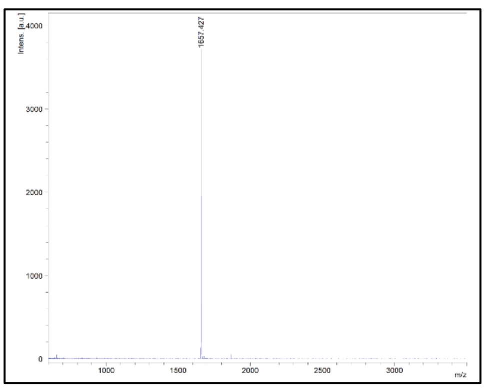

Figure S11. MALDI spectrum of COOH FHHF-11 (Ac-FHHFRFRFHHF-COOH) peptide.

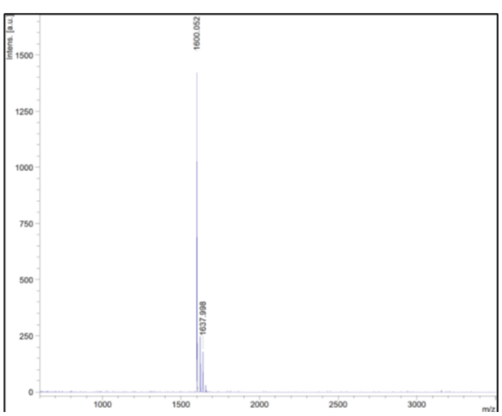

Figure S12. MALDI spectrum of FHHF-K (Ac-FHHFKFKFHHF-$CONH_2$) peptide.

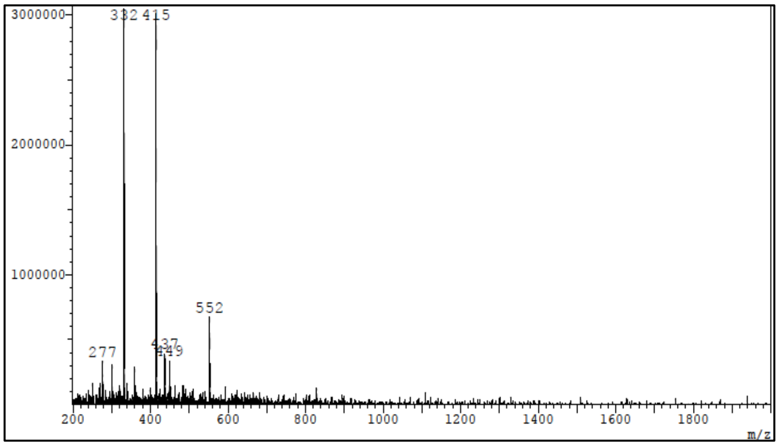

Figure S13. LCMS of HHF (Ac-HHFRFRFRFHH-CONH$_2$) peptide.

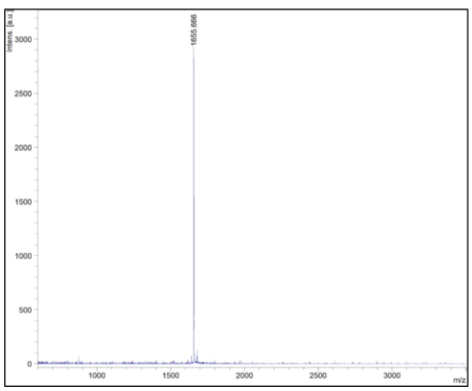

Figure S14. MALDI spectrum of HFH (Ac-HFHFRFRFHFH-CONH$_2$) peptide.

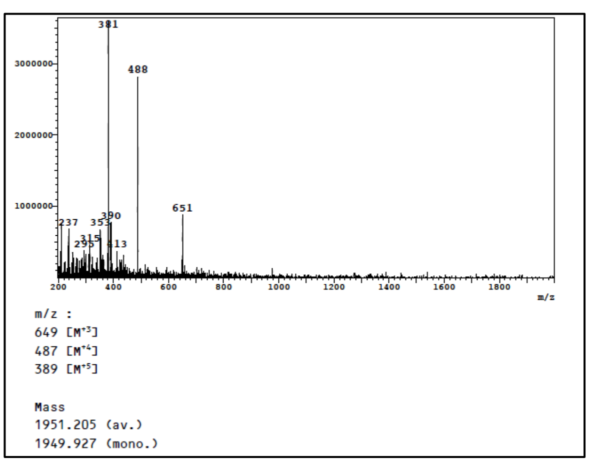

Figure S15. LCMS of FHFH (Ac-FHFHFRFRFHFHF-CONH$_2$) peptide.

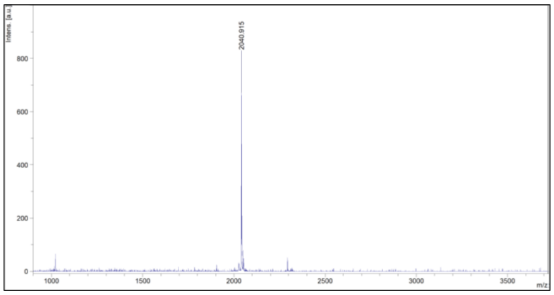

Figure S16. MALDI spectrum of FHHF-GRGD (Ac-FHHFRFRFHHFGRGD-CONH$_2$) peptide.

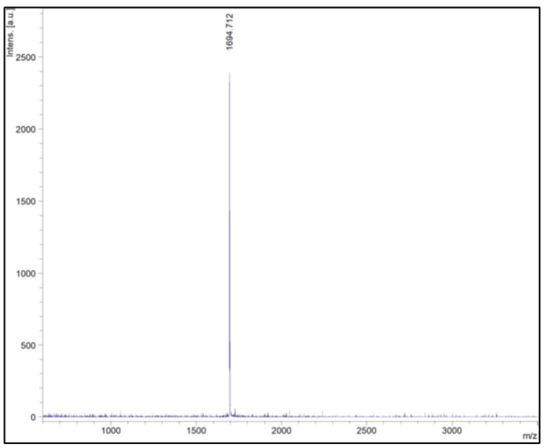

Figure S17. MALDI spectrum of Ac-WHHFRFRFHHF-CONH$_2$ peptide.

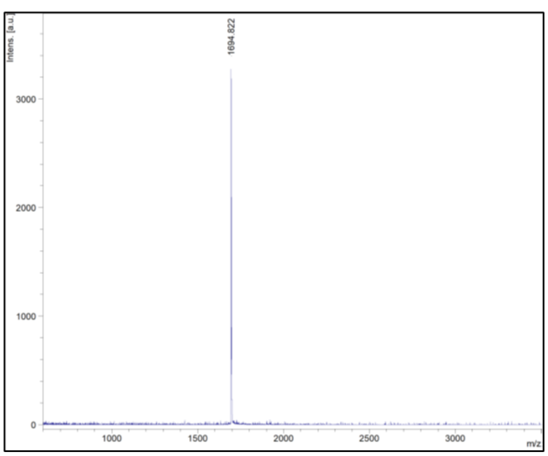

Figure S18. MALDI spectrum of Ac-FHHFRFRFHHW-CONH$_2$ peptide.

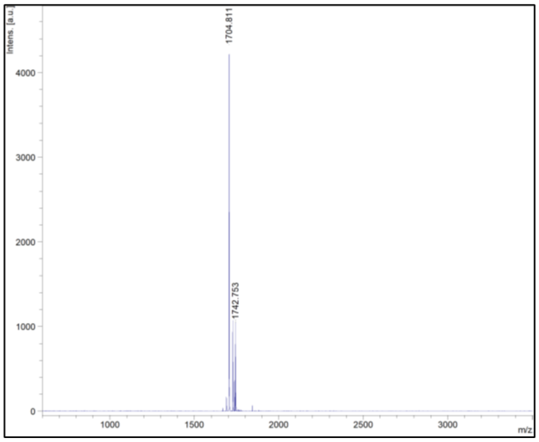

Figure S19. MALDI spectrum of Ac-FHWFRFRFHHF-$CONH_2$ peptide.

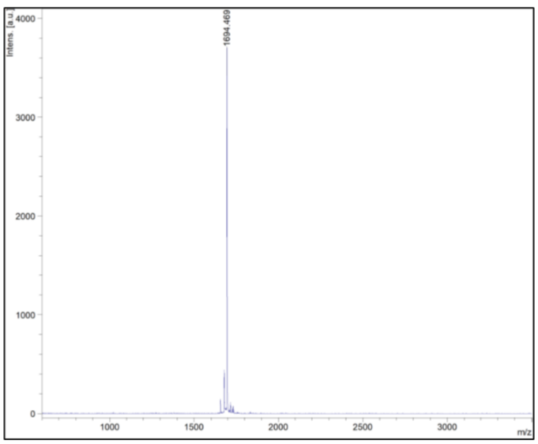

Figure S20. MALDI spectrum of Ac-FHHFRWRFHHF-$CONH_2$ peptide.

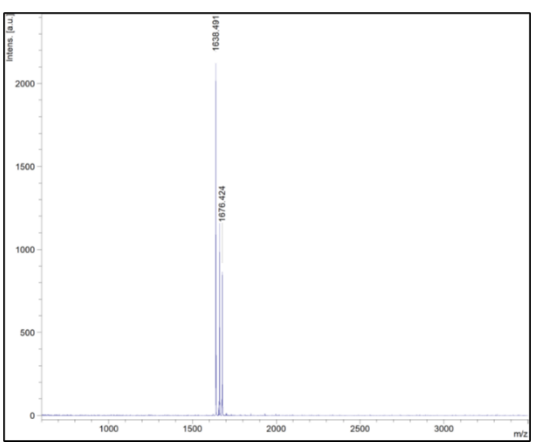

Figure S21. MALDI spectrum of Ac-FHHFKWKFHHF-$CONH_2$ peptide.

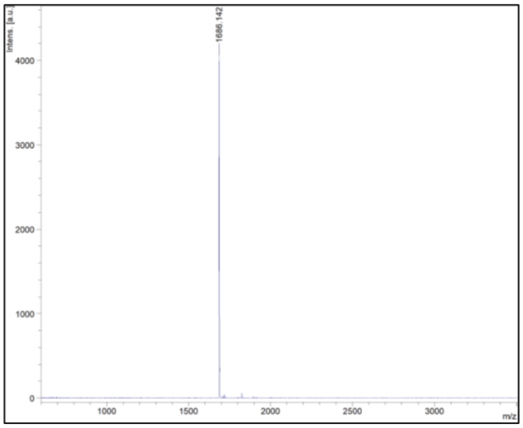

Figure S22. MALDI spectrum of Ac-FHHFRFWFHHF-CONH2 peptide.

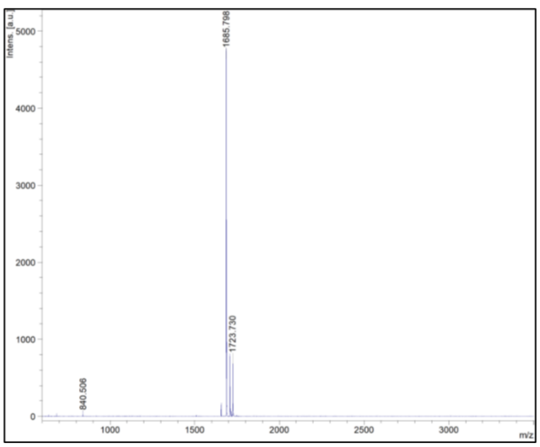

Figure S23. MALDI spectrum of Ac-FHHFWFRFHHF-CONH2 peptide.

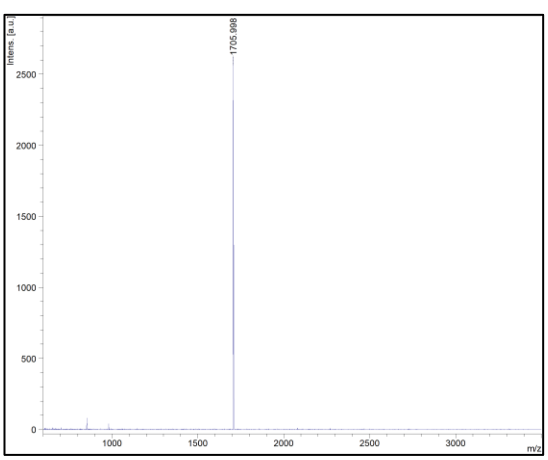

Figure S24. MALDI spectrum of Ac-FHHFR(AzAla)RFHHF-CONH2 peptide.

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