Electronic Supplementary Material (ESI) for Biomaterials Science.

Supplementary Figures and Data

Self-Assembled Di- and Tripeptide Gels for the Passive Entrapment and pH-Responsive, Sustained Release of an Antidiabetic Drug, Glimepiride

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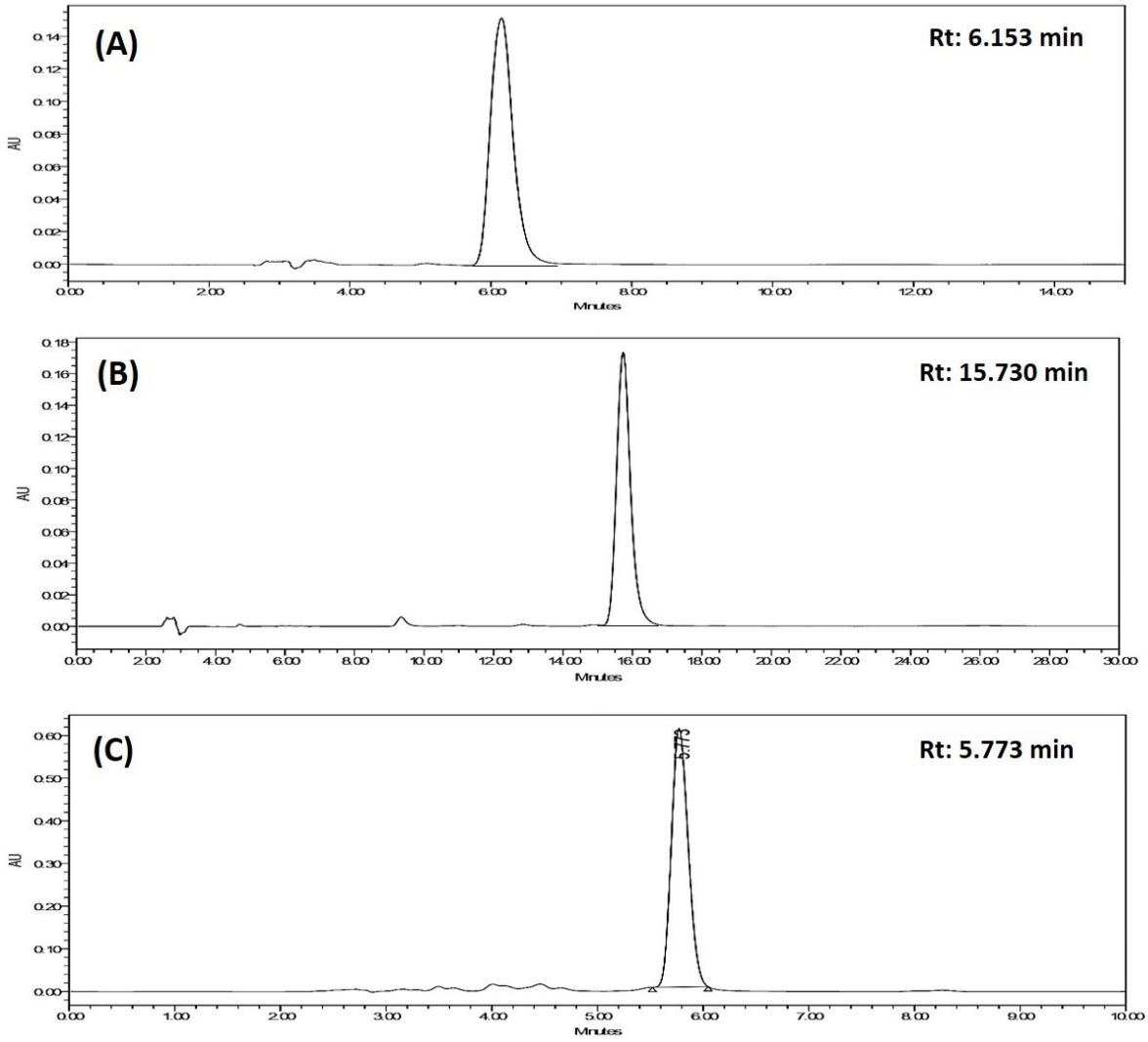

Fig. S1 RP-HPLC of peptides. (A) Fmoc-YY-NH_2. (B) Fmoc-WW-NH_2. (C) Fmoc-WWH-NH_2.

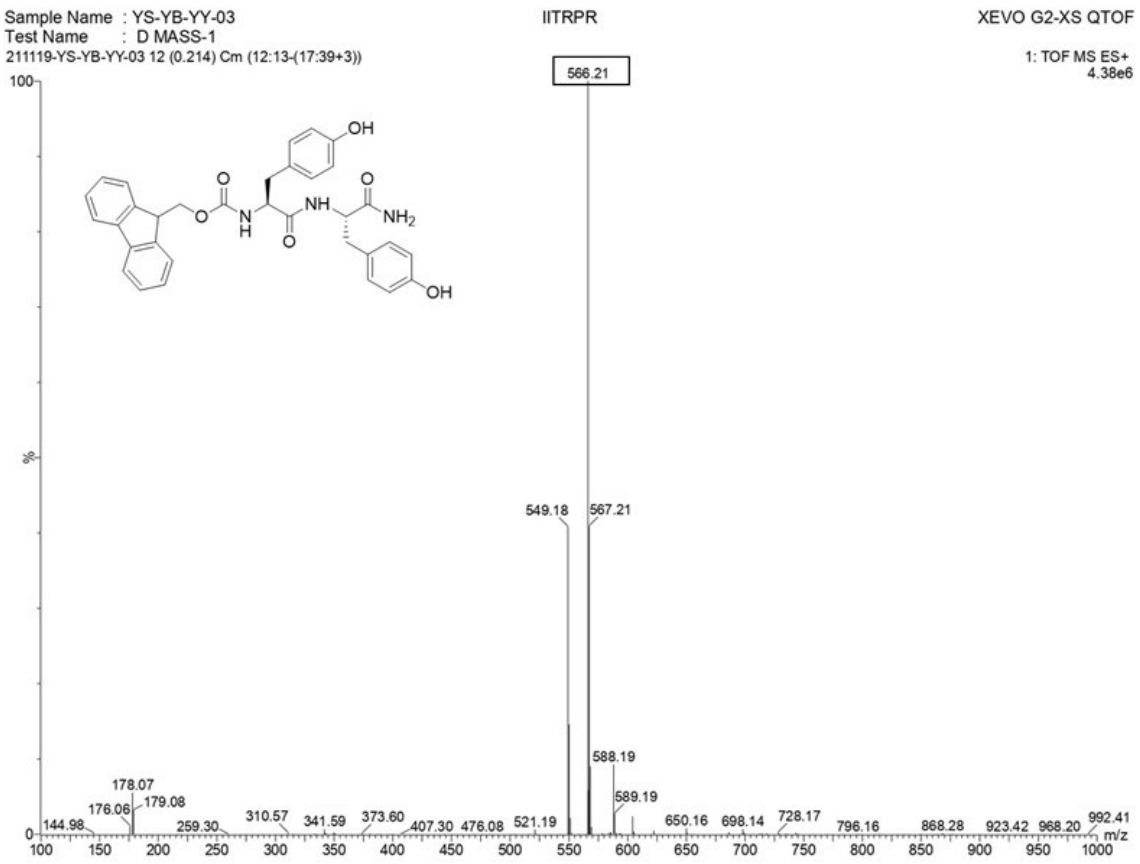

Fig. S2 Mass spectrum of Fmoc-YY-NH_2 peptide.

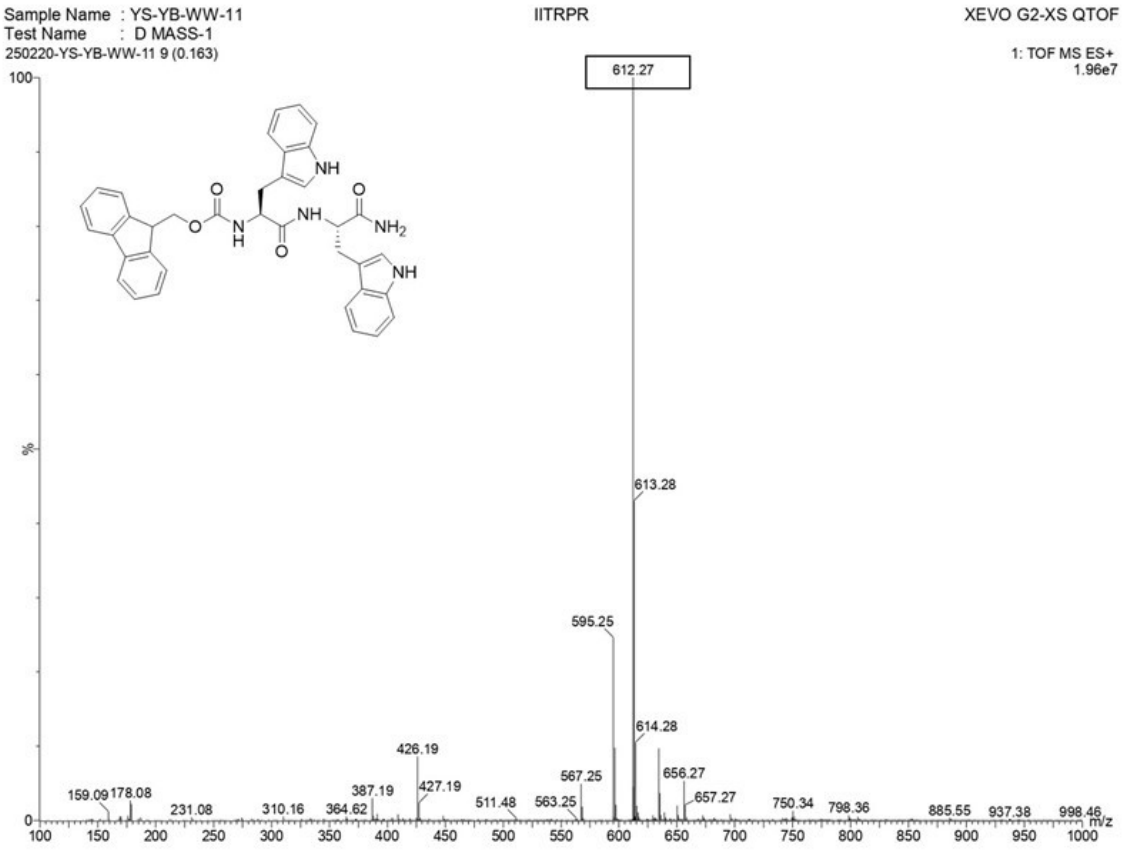

Fig. S3 Mass spectrum of Fmoc-WW-NH_2 peptide.

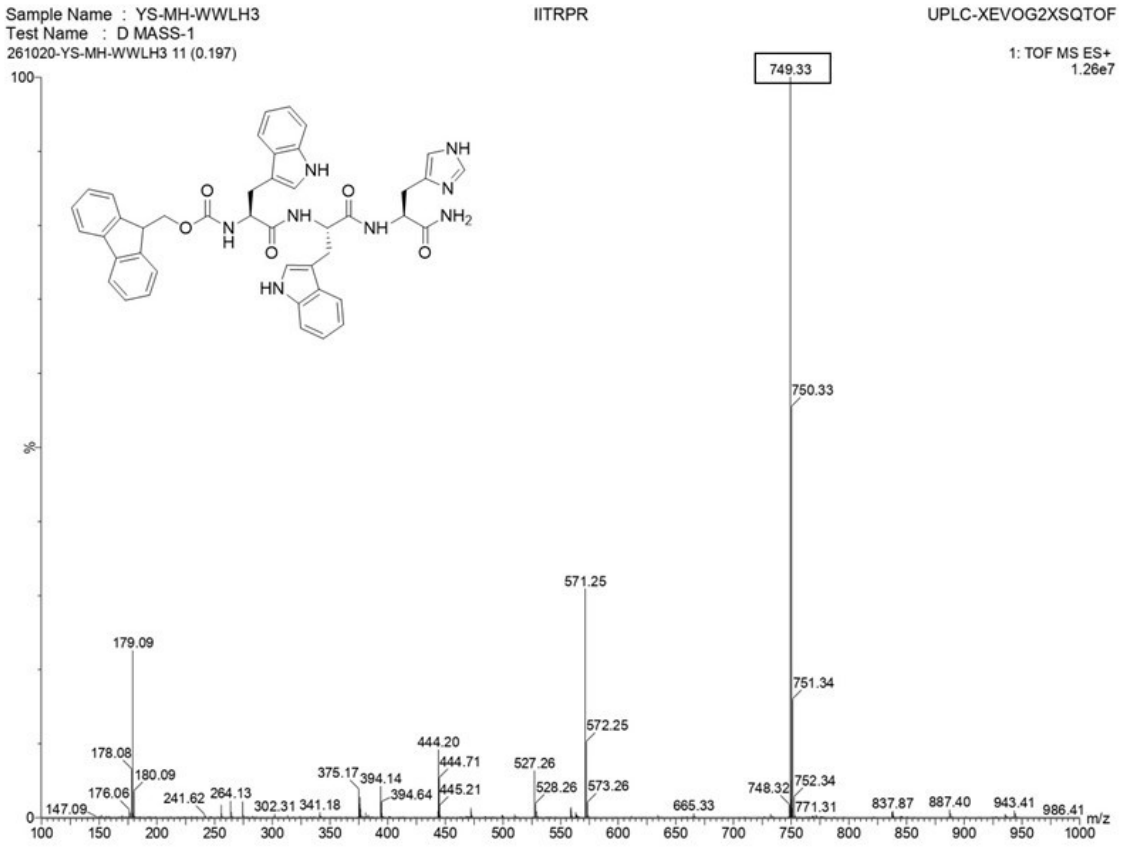

Fig. S4 Mass spectrum of Fmoc-WWH-NH_2 peptide.

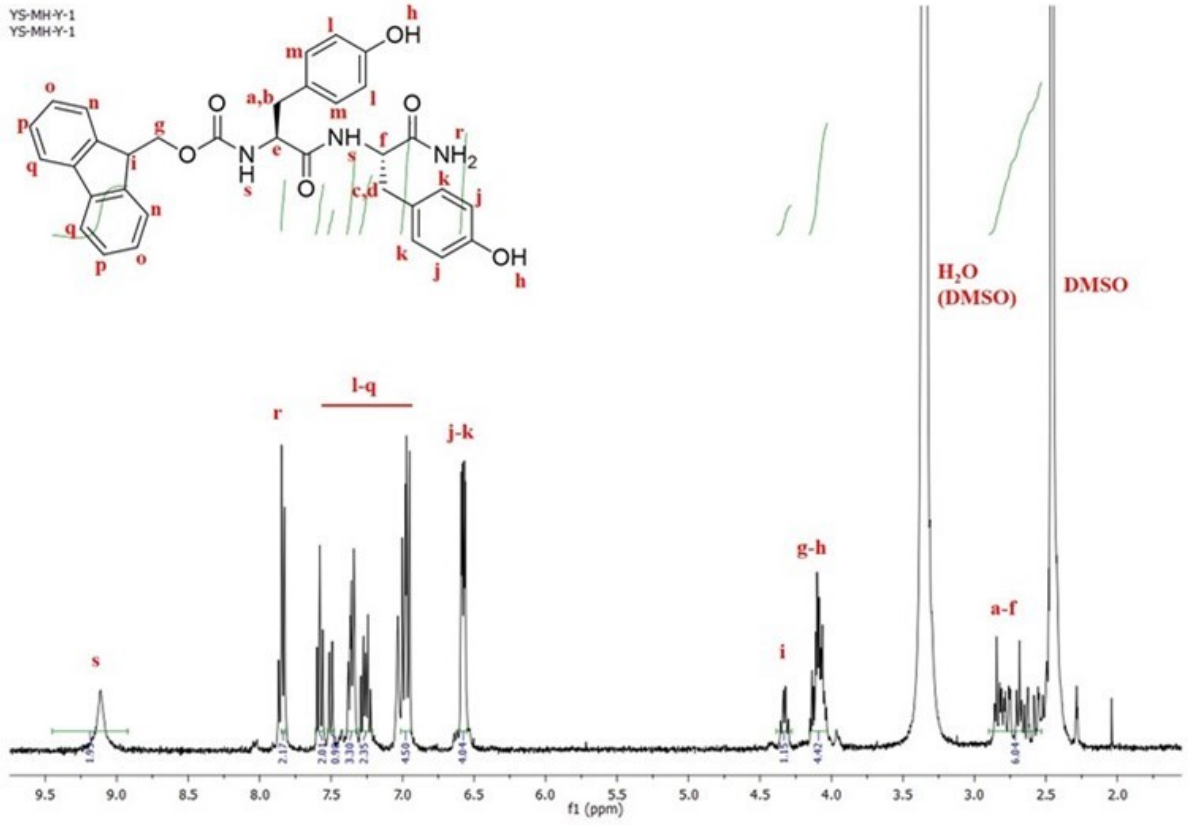

Fig. S5 ^{1}H NMR spectrum of Fmoc-YY-NH_2 peptide.

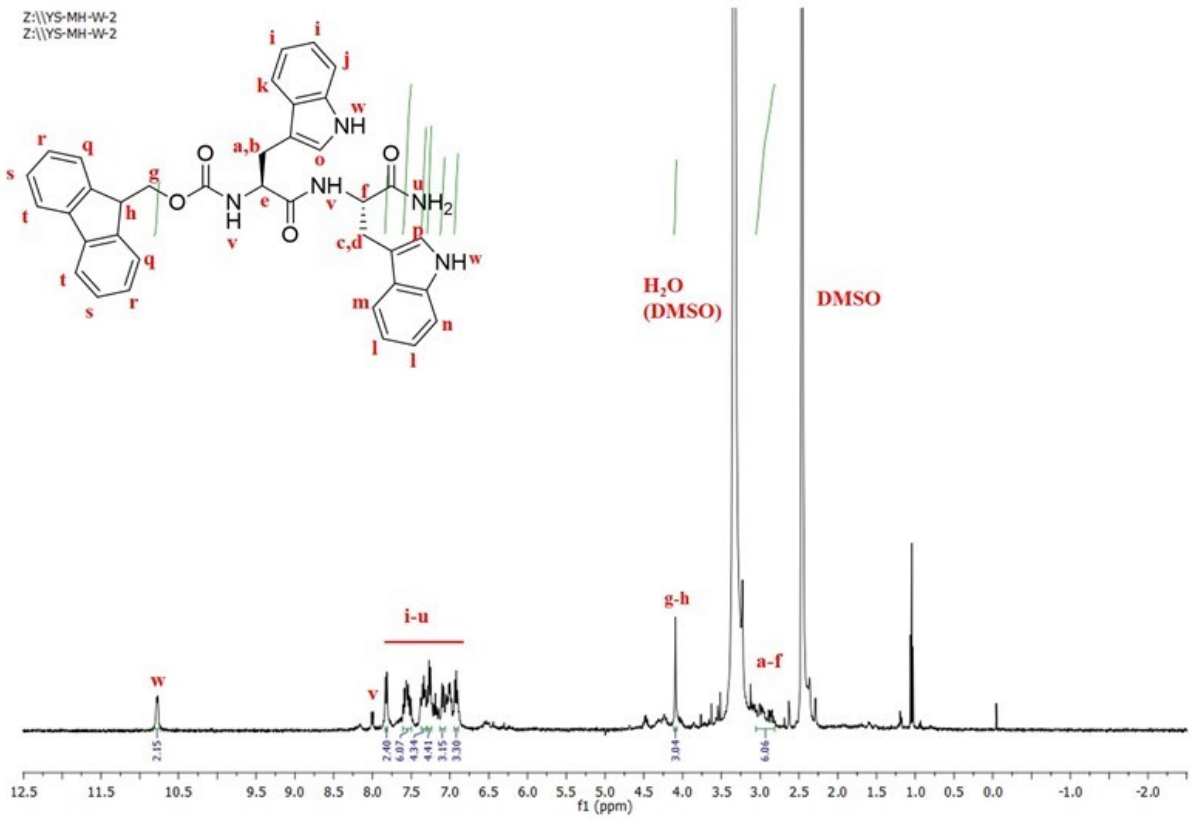

Fig. S6 ^{1}H NMR spectrum of Fmoc-WW-NH_2 peptide.

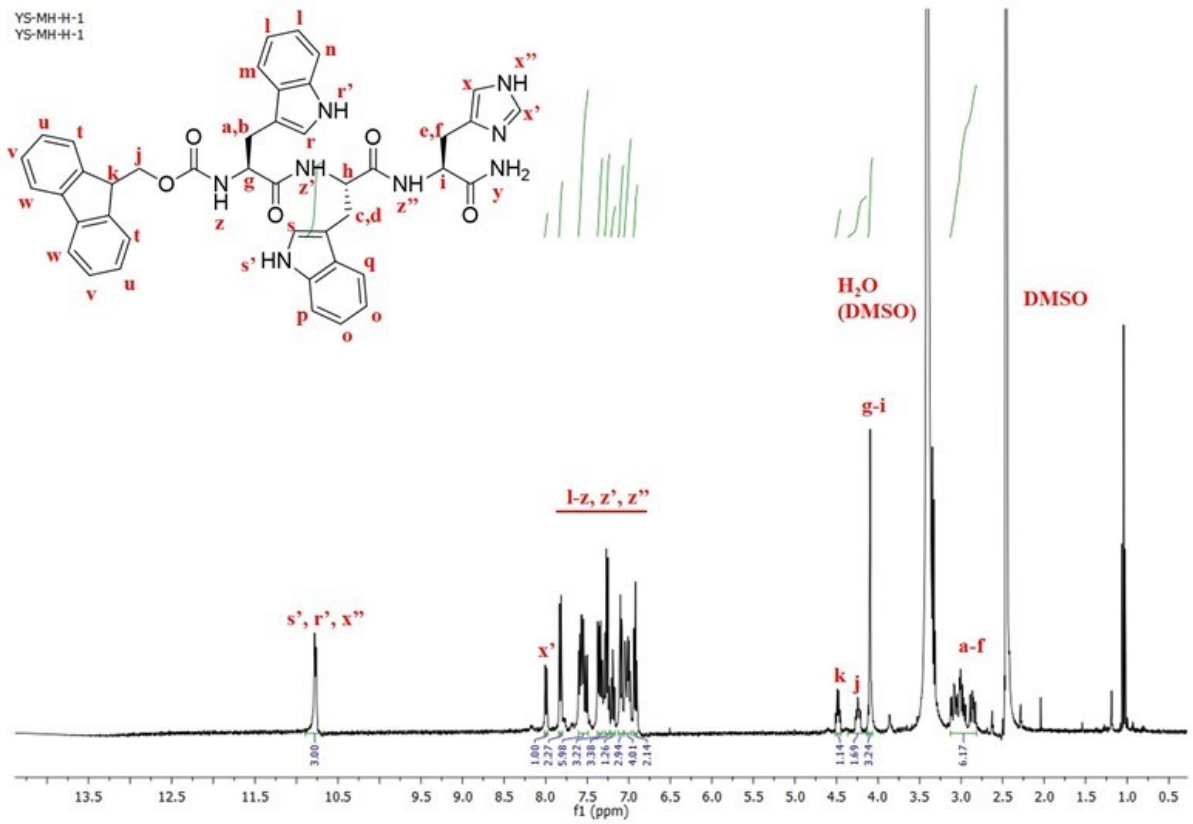

Fig. S7 ^{1}H NMR spectrum of Fmoc-WWH-NH_2 peptide.

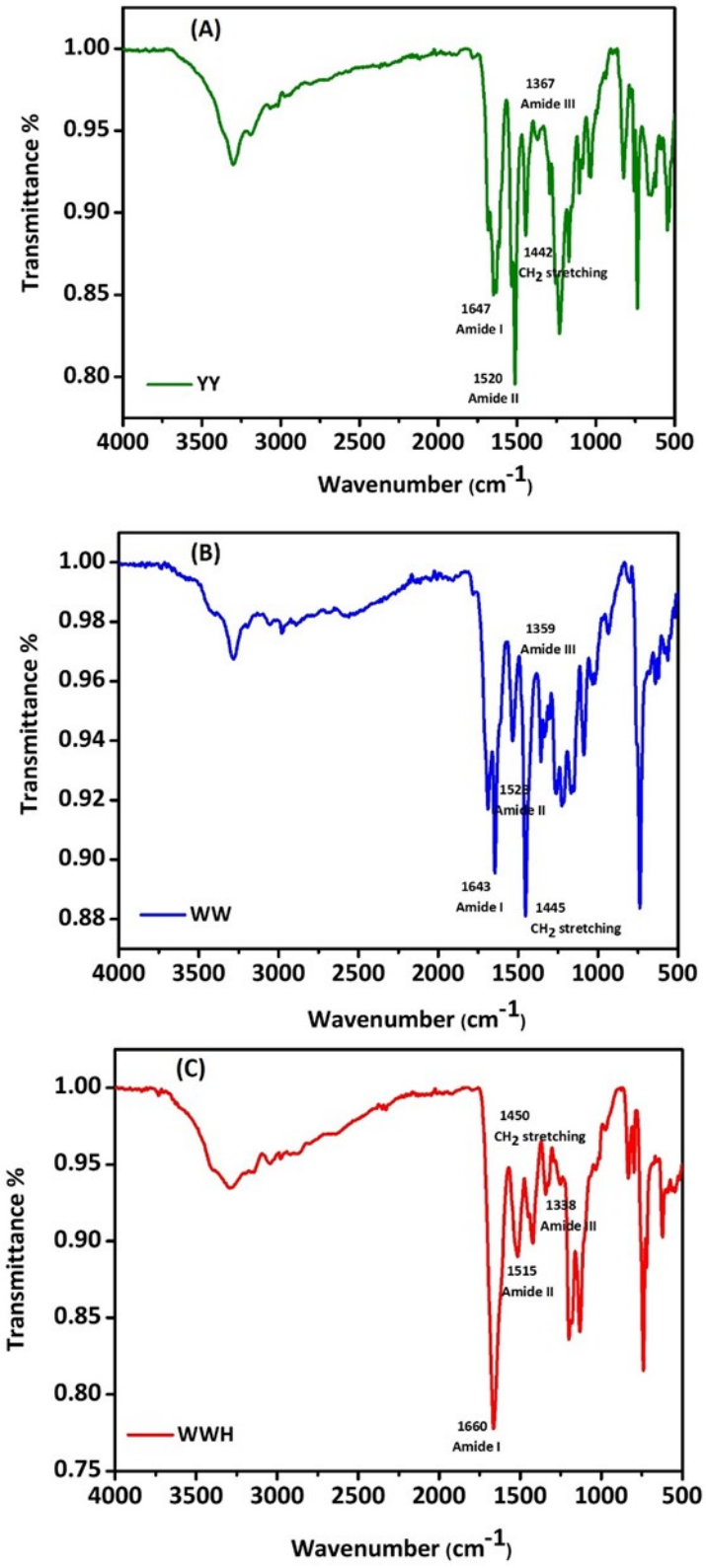

Fig. S8 FTIR spectra of peptides. (A) YY. (B) WW. (C) WWH.

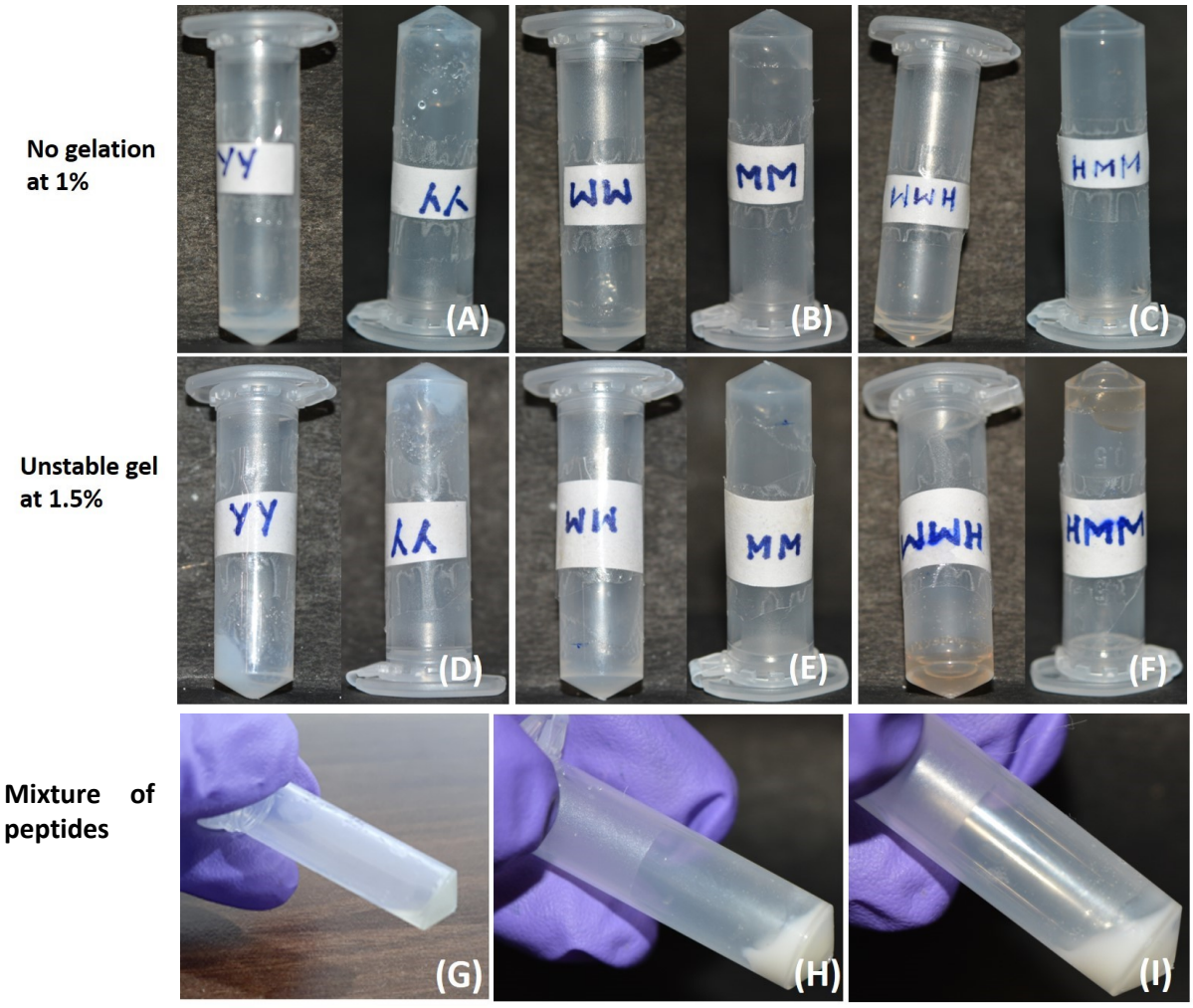

Fig. S9 Images of peptide gels at different concentrations. (A, D) YY. (B, E) WW. (C, F) WWH. Combination of YY, WW, and WWH for gelation at different concentrations. (G) 1%. (H) 1.5%. (I) 2%.

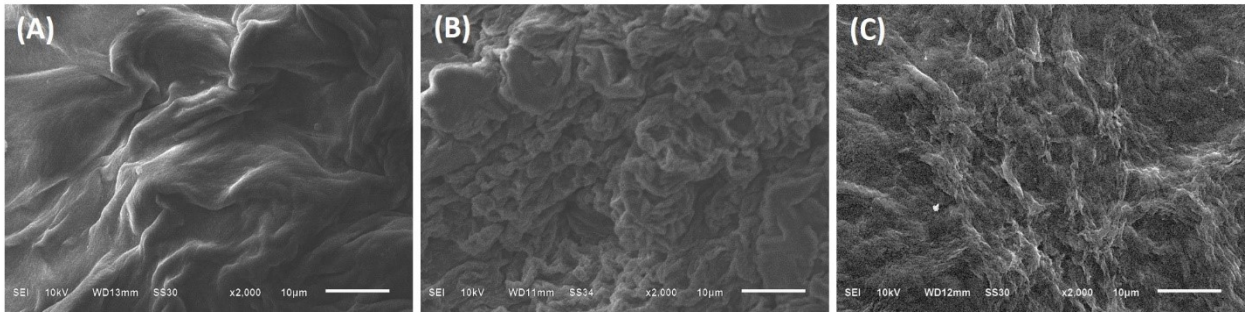

Fig. S10 Scanning electron microscopy (SEM) images of dried glimepiride-loaded peptide gels (2% w/v). (A) YY. (B) WW. (C) WWH. Scale bar 10 µm.

Fig. S11 Injectability of WWH gel.

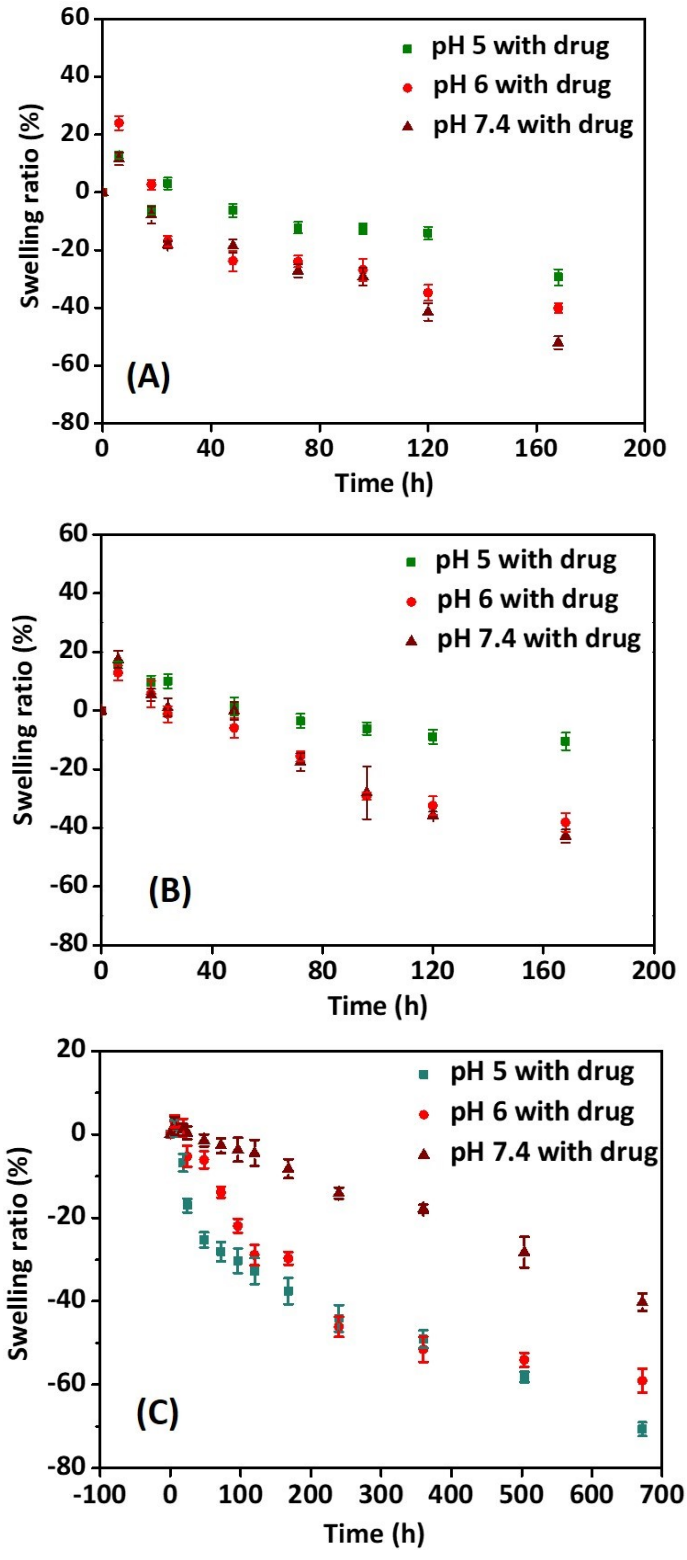

Fig. S12 Swelling and degradation of glimepiride-loaded peptide gels at pH 5, 6, and 7.4. (A) YY. (B) WW. (C) WWH. Values above 0% indicate gravimetric water uptake, whereas negative values suggest degradation. Data reported are mean ± SE (n = 3).

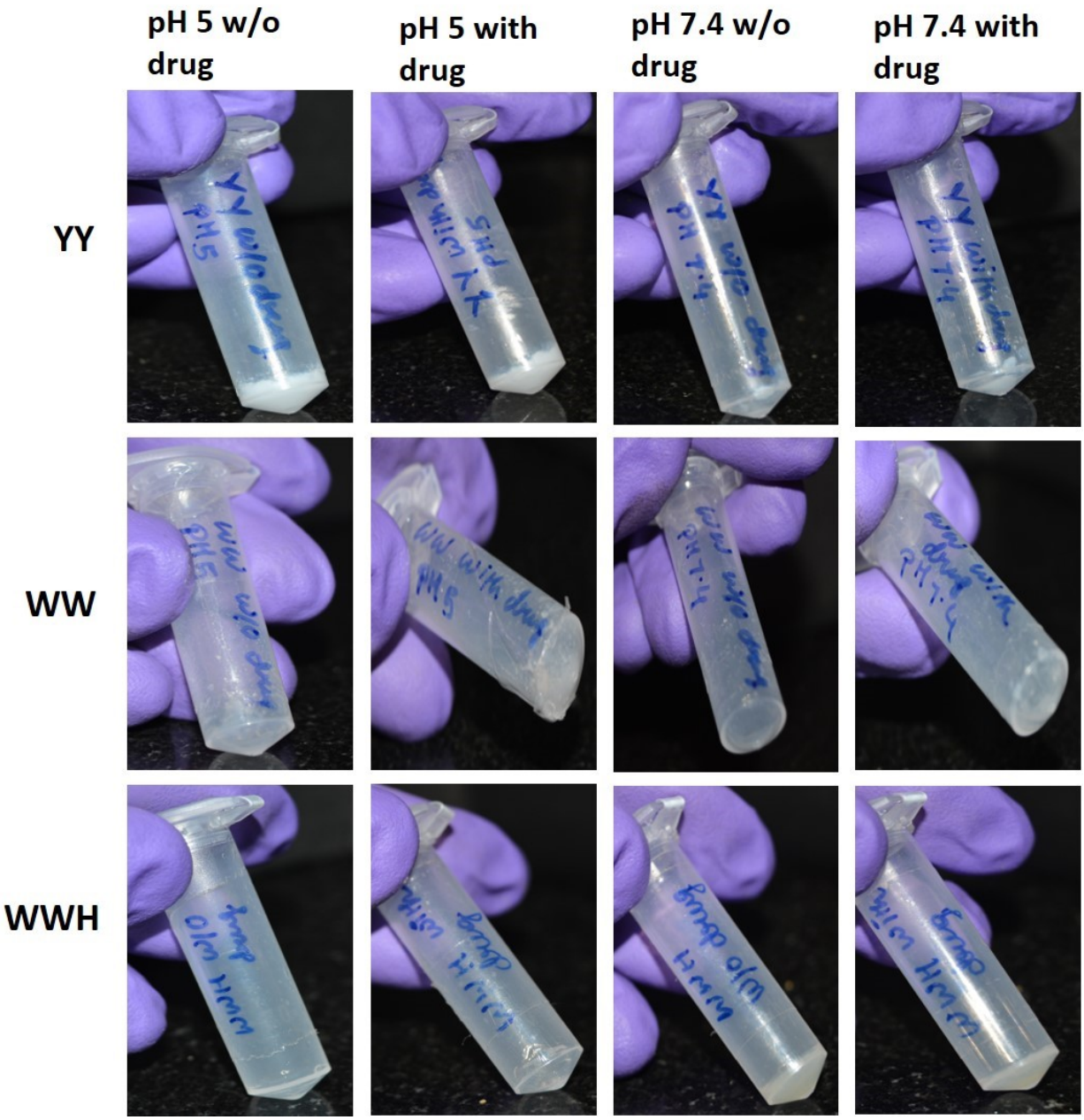

Fig. S13 Images of peptide gels after swelling and degradation studies.

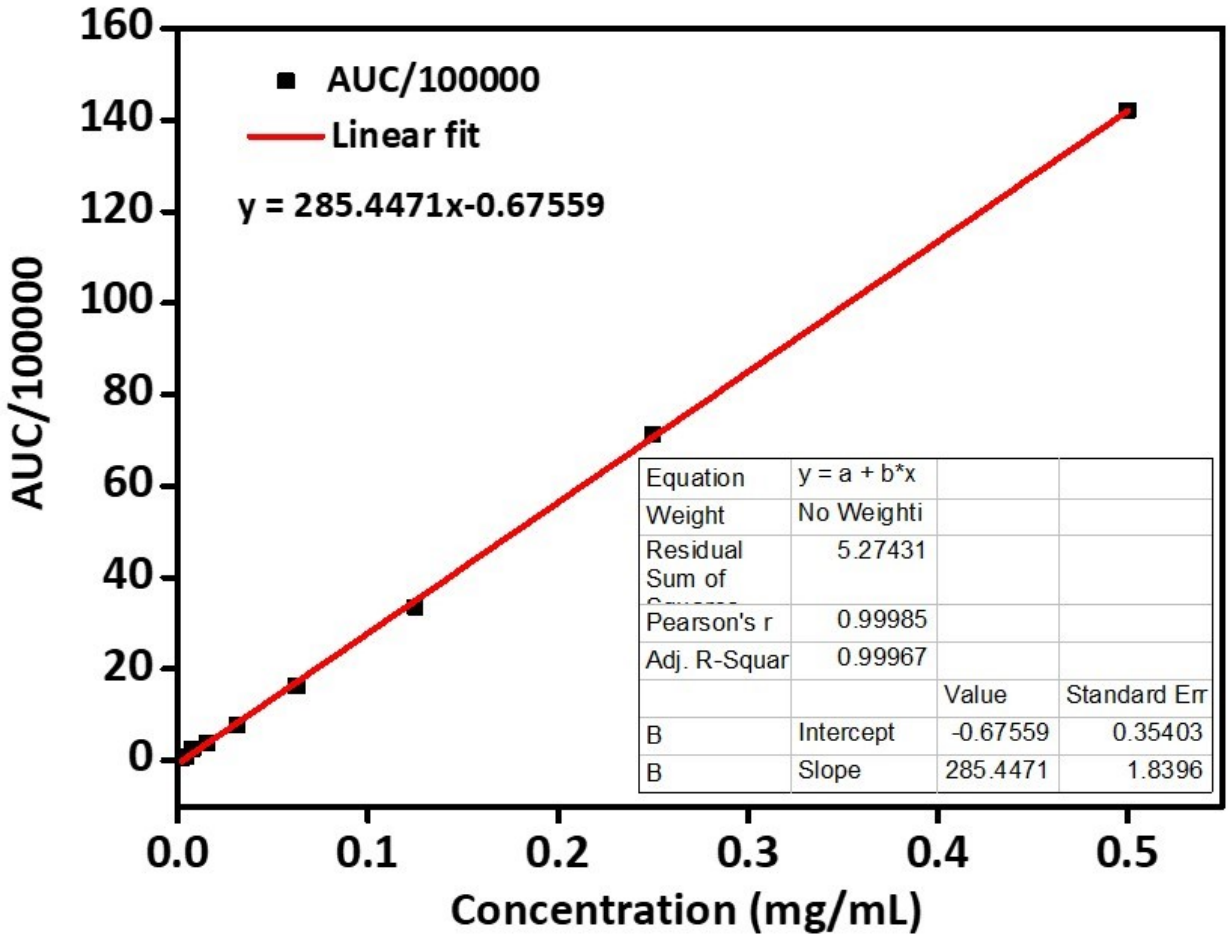

Fig. S14 Standard curve of glimepiride.

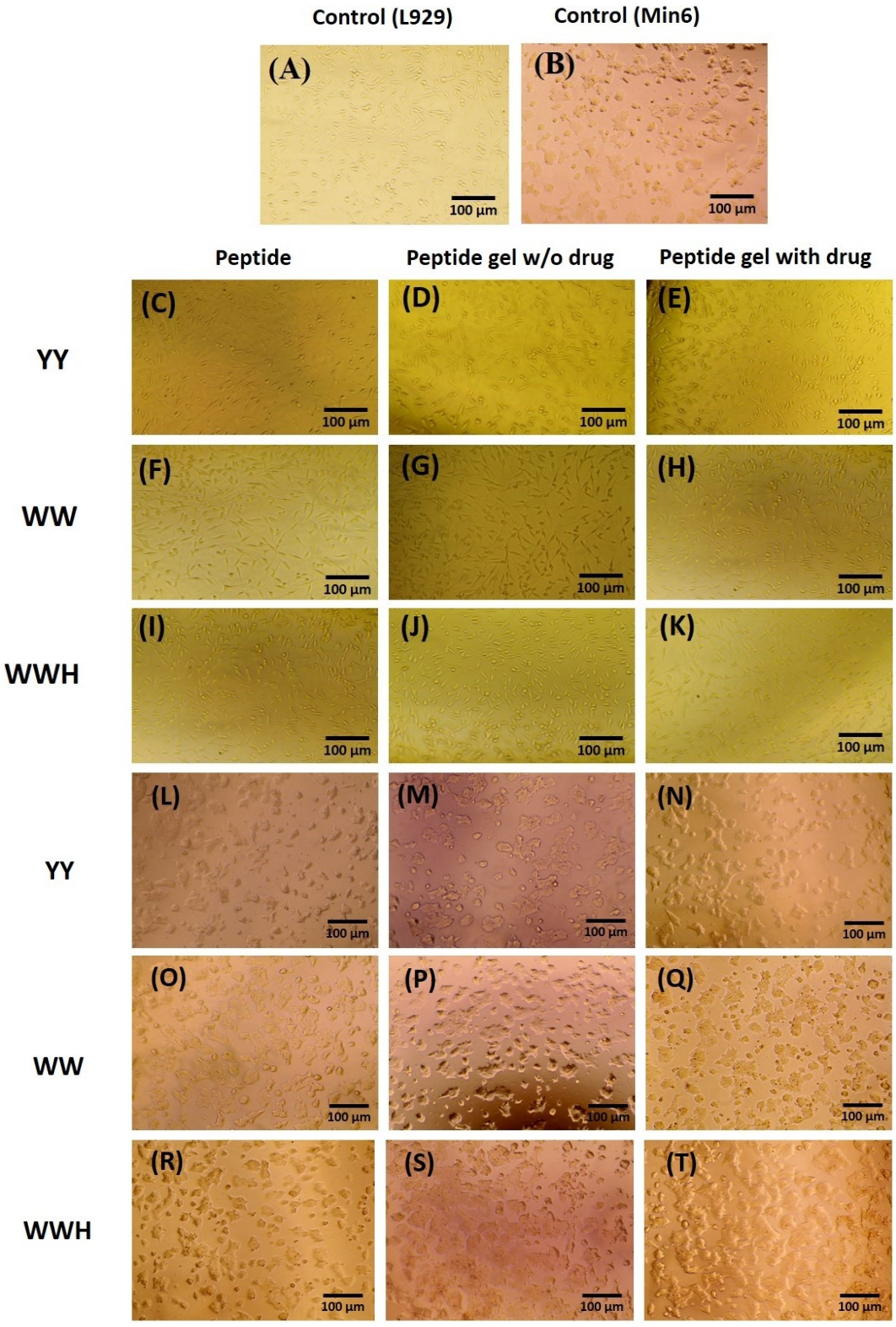

Fig. S15 Images of cells after treatment with peptides, peptide gels, and glimepiride-loaded peptide gels for 24 h. (A, B) Control of L929 and Min6 cells. (C-K) L929 cells. (L-T) Min6 cells. Cells without peptides/gels were taken as a control.

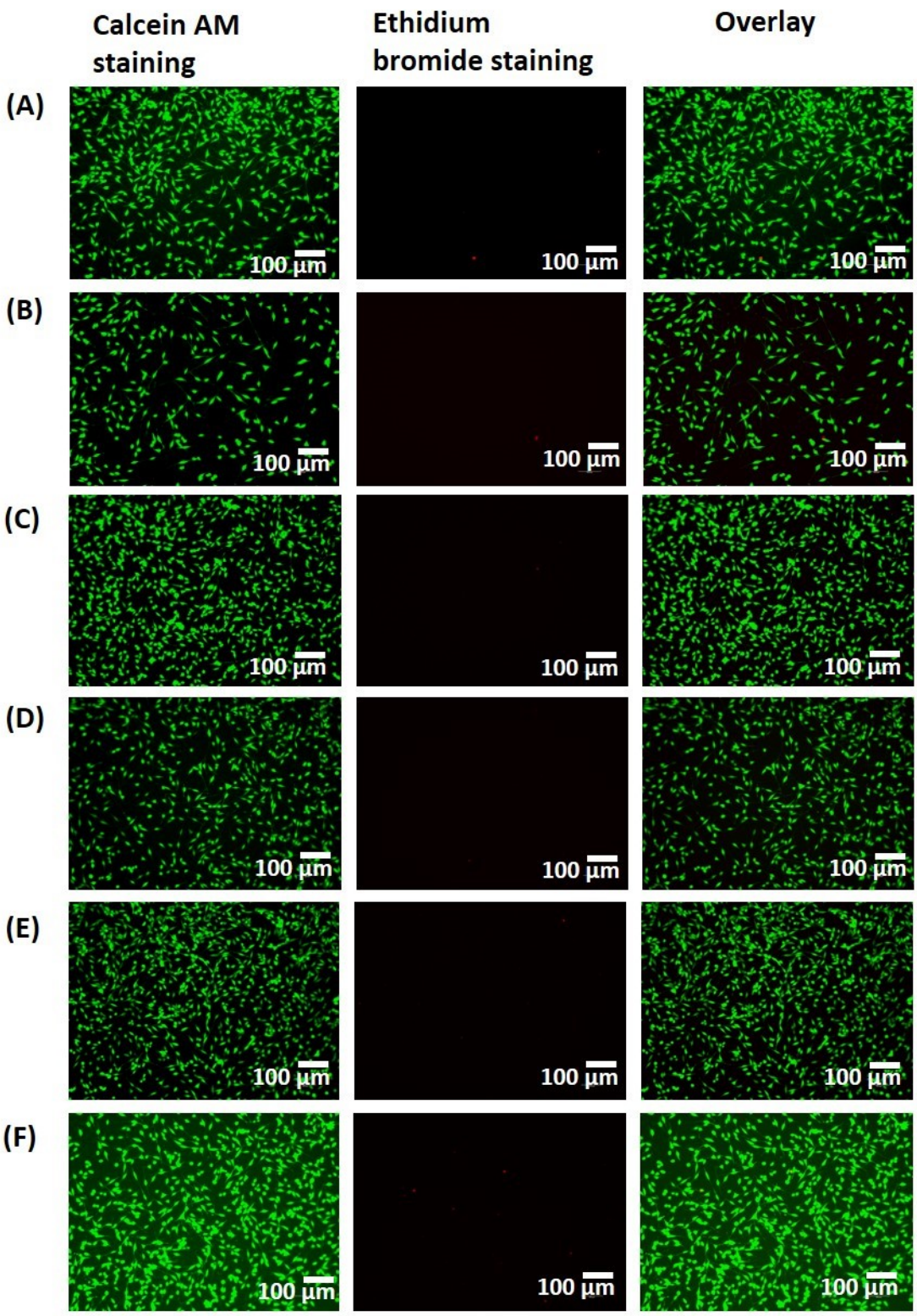

Fig. S16 Fluorescence images of L929 cells stained with live and dead cell staining dyes, calcein AM and ethidium bromide, and acquired after 24 h of treatment with the releasate of peptides/gels. (A) YY peptide. (B) YY peptide gel. (C) WW peptide. (D) WW peptide gel. (E) WWH peptide. (F) WWH peptide gel. Scale bar: 100 μm.

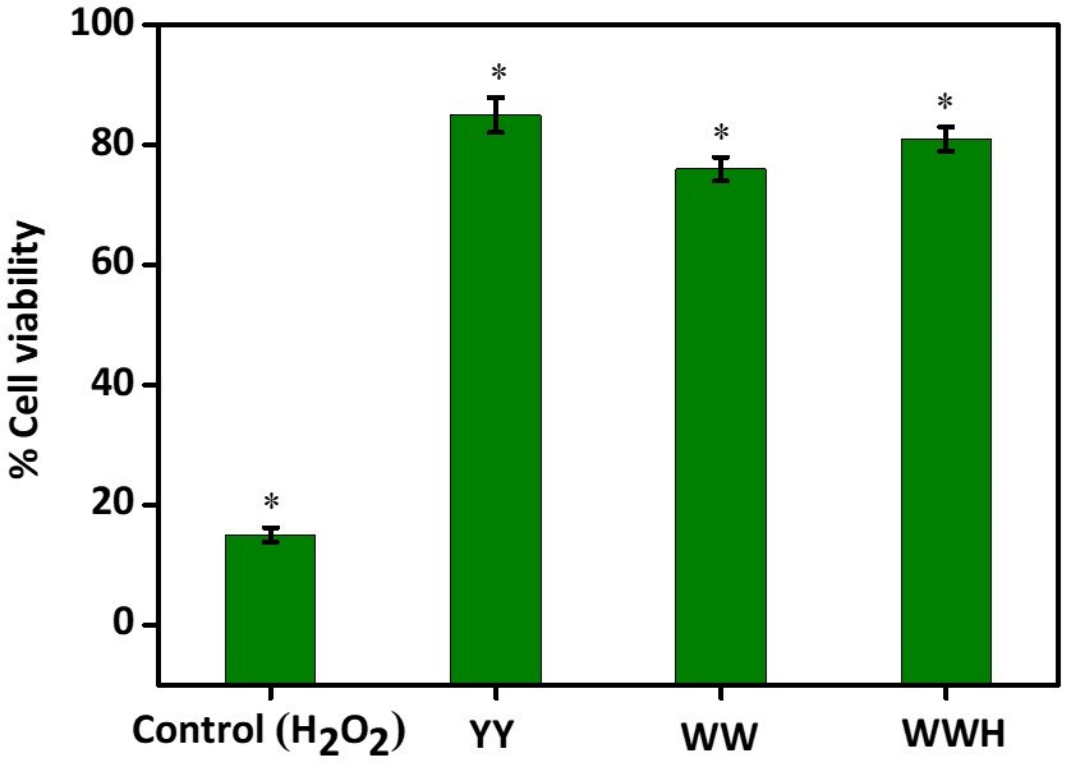

Fig. S17 Effect of glimepiride-loaded peptide gels on the viability of H_2O_2-treated HepG2 cells. Data reported are mean ± SE (n = 3). Comparisons between two groups (samples to control) were carried out using Student's t-test. *p < 0.05 indicates statistically significant data.

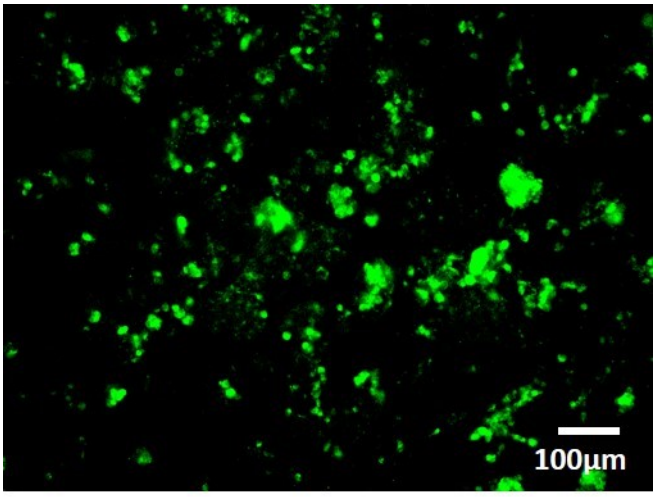

Fig. S18 Fluorescence microscopy image of HepG2 cells incubated with 2-NBDG for 5 days in the presence of glimepiride solution (0.1 mg/mL).