

## Supplementary Information

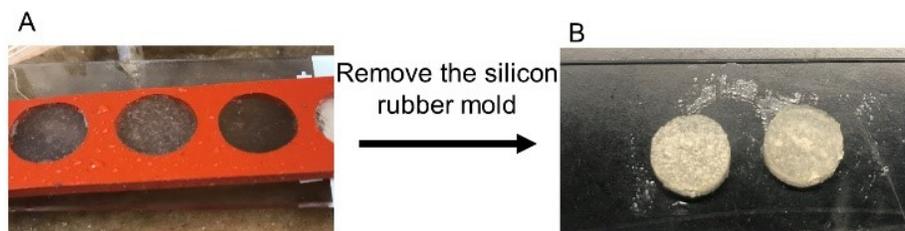
### **Accelerated Dermal Wound Healing in Diabetic Mice by H<sub>2</sub>O<sub>2</sub>-Generating Catechol-Functionalized Gelatin Microgel**

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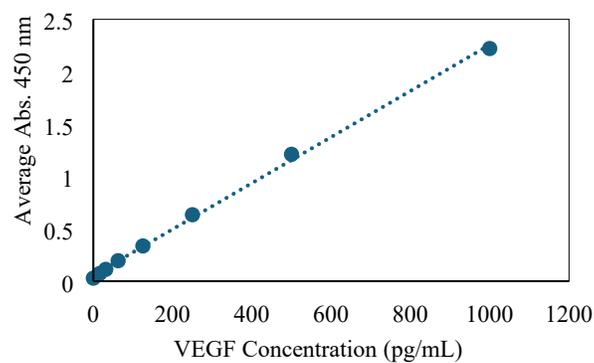
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## Formation of Hydrogel Film



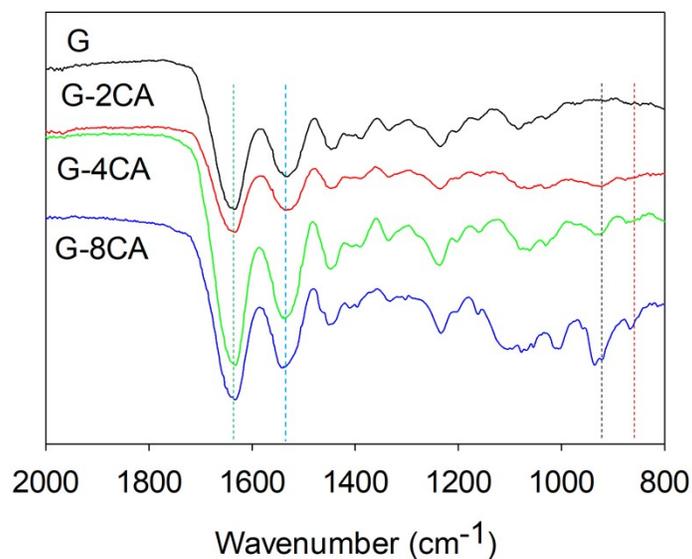
**Figure S1.** Photographs of (A) the silicon rubber mold created over a glass slide and (B) hydrogel film after removing the mold.

## ELISA Assay

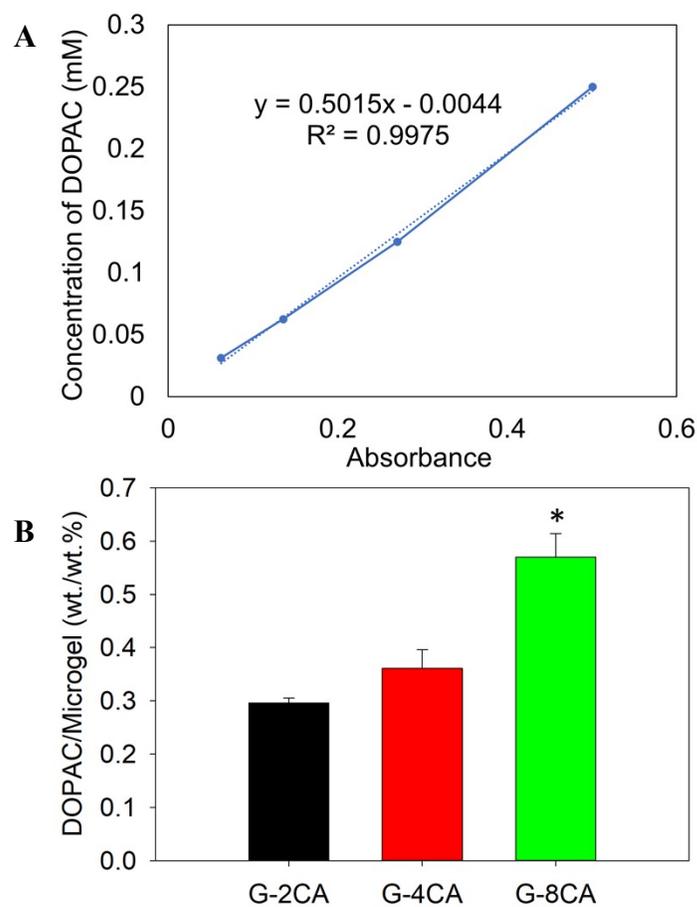


**Figure S2.** Standard curves for vascular endothelial growth factor (VEGF) concentration at a wavelength of 450nm.

## Characterization of Microgels

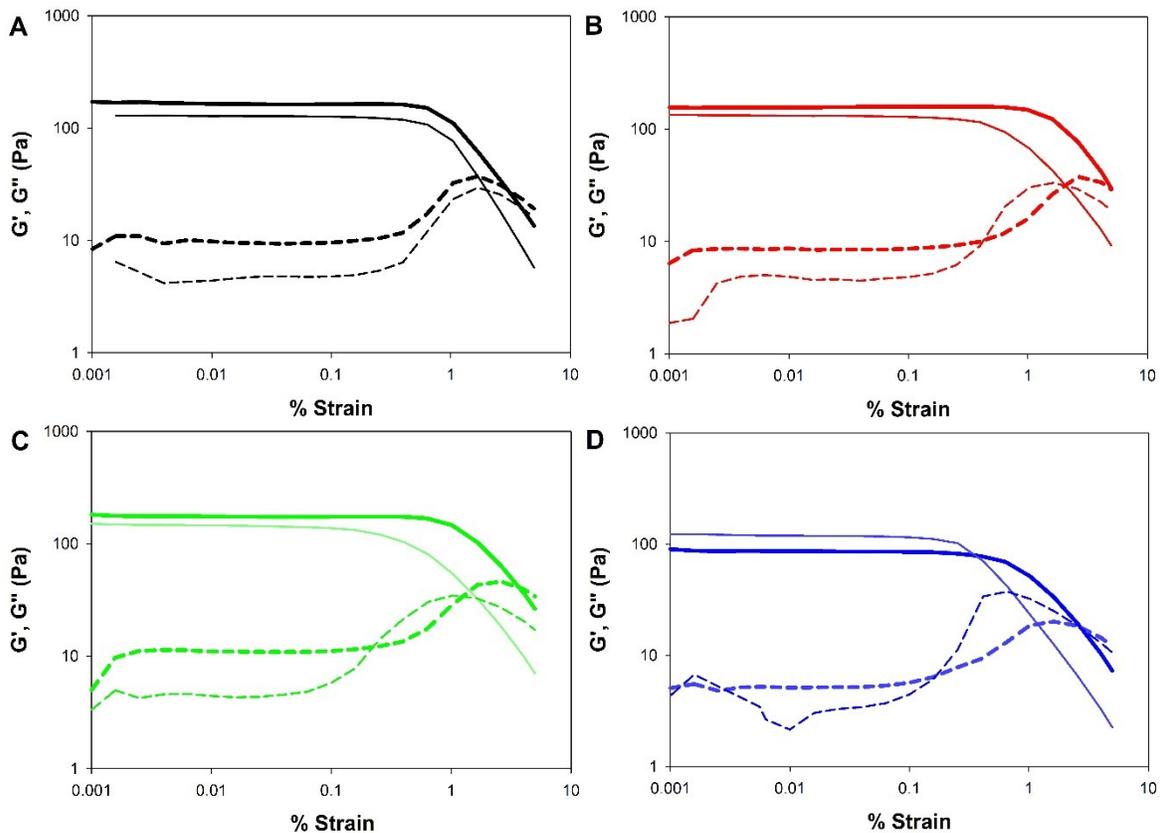


**Figure S3.** ATR-FTIR spectra of microgels. The peaks at 868 and 922  $\text{cm}^{-1}$  (red and black dashed line, respectively) are associated with the out-of-plane bending of =C-H bonds of an aromatic ring that exists in catechol. The peak at 1540 and 1640  $\text{cm}^{-1}$  (blue and green dashed line) are attributed to the amide N-H bending vibration and C=O stretching of amide groups, respectively, which exist in both DOPAC and gelatin.

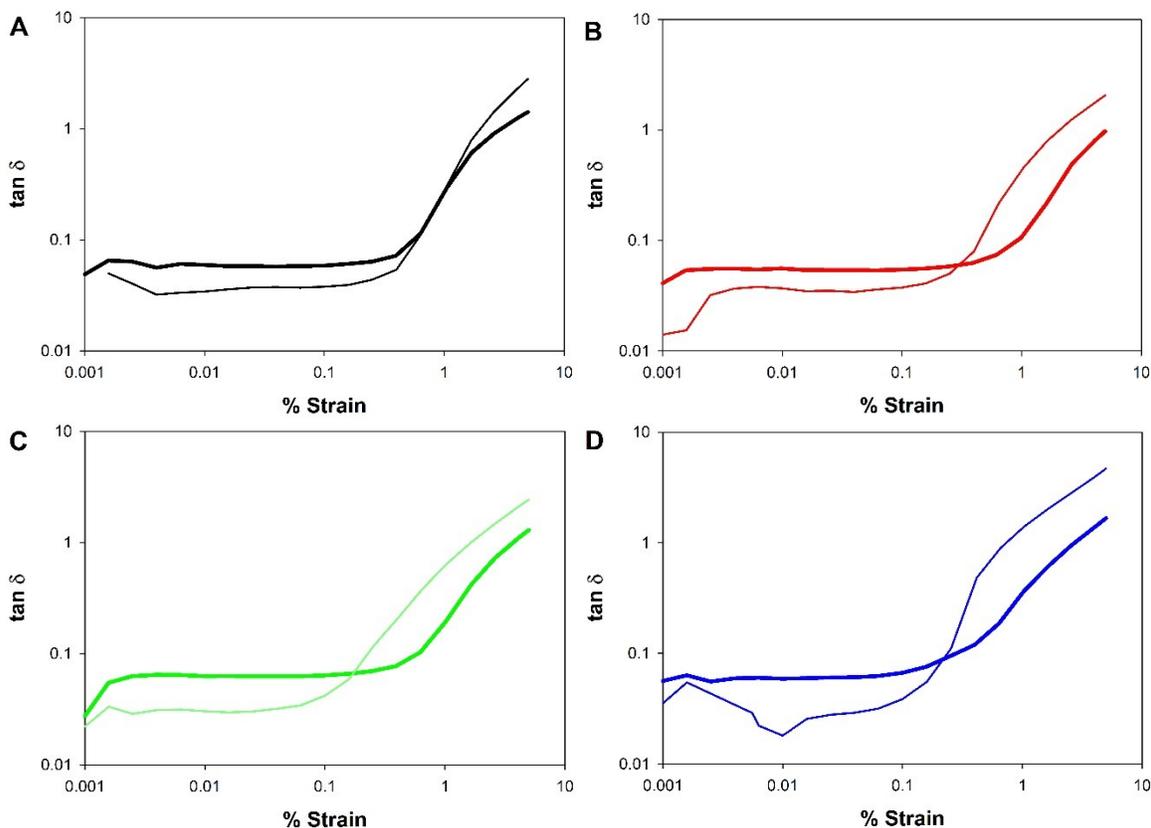


**Figure S4.** UV-vis analysis to determine catechol contents in the microgels. (A) Standard curves for DOPAC at a wavelength of 280 nm. (B) Weight % of DOPAC in each catechol-modified microgel. \* $p < 0.001$  when compared to other microgels.

## Rheological Assessment



**Figure S5.**  $G'$  (solid lines) and  $G''$  (dashed lines) for (A) G, (B) G-2CA, (C) G-4CA, and (D) G-8CA tested at a frequency of 0.1 Hz. The thicker lines represent microgel suspensions tested immediately after hydration while the thinner lines represent hydrogel films that were incubated at 37°C for 48 hours.

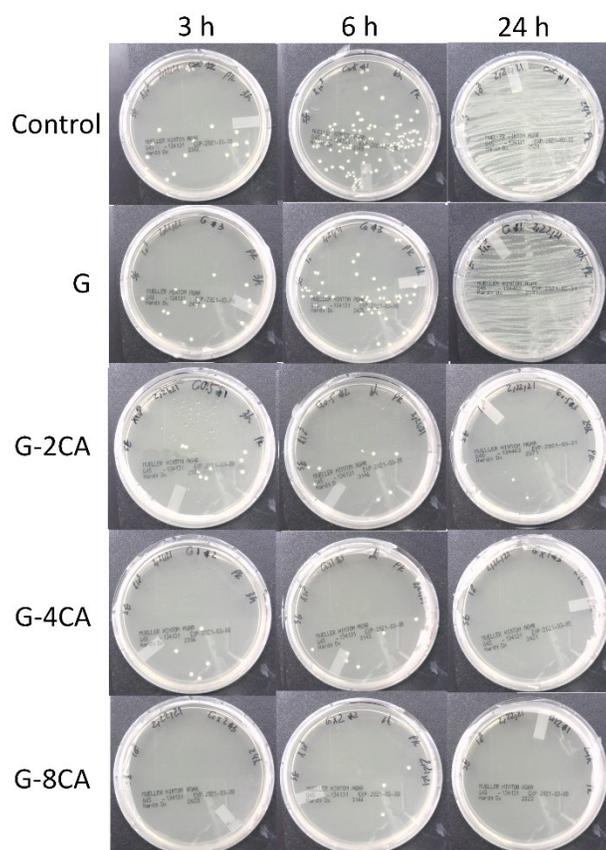


**Figure S6.**  $\tan \delta$  for (A) G, (B) G-2CA, (C) G-4CA, and (D) G-8CA tested at a frequency of 0.1 Hz. The thicker lines represent microgel suspensions tested immediately after hydration while the thinner lines represent hydrogel films that were incubated at 37°C for 48 hours.

**Table S1.** Rheological data for microgel suspension tested at time = 0h and hydrogel films after incubation for 48 h at 37°C.

Sample	Time Point (h)	$\tan \delta$ at 0.01% Strain	% Strain at $G' = G''$ Crossover
G	0	0.0594	3.14
	48	0.0342	2.10
G-2CA	0	0.0557	5.00
	48	0.0368	2.16
G-4CA	0	0.0626	3.81
	48	0.0303	1.63
G-8CA	0	0.0589	2.81
	48	0.0180	0.76

## Antibacterial Assay



**Figure S7.** Photograph of the test plates with *S. epidermidis* colonies exposed to 5 v/v% broth (control) and gelatin microgels taken at different time points.