

Supporting Information

Design of Apoptotic Cell-Mimetic Wound Dressing using Phosphoserine-Chitosan Hydrogels

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Table of contents:

- **Table S1 Feed ratio of each reagent for PS/HPA conjugated chitosan synthesis.**
- **Fig. S1 Schematic diagram for the hydrogel formation of PS/HPA conjugated chitosan through enzyme/catalyst reaction.**
- **Fig. S2 Equilibrium swelling ratio of the freeze-dried CS hydrogel and CS-PS hydrogels in PBS at 37°C (Mean ± SD, n=8, **: P<0.01).**
- **Fig. S3 cell viability of NIH3T3 cell line by CS and CS-PS hydrogels. Protocol was followed ISO-10993 cytotoxicity test. (Mean ± SD, n=6)**
- **Fig. S4 Cytokine secretion of IL-10 from macrophage treated by CS and CS-PS hydrogels. (Mean ± SD, n=8)**
- **Fig. S5. Cytokine secretion of the pro-inflammatory cytokine IL6 treated by PS nanoparticle, CS, and CS-PS. (Mean ± SD, n=8, ***: p<0.001)**
- **Fig. S6 Blood glucose level of rats before the introduction of diabetes and during wound healing.**
- **Fig. S7 Masson's trichrome histological photomicrographs of wound lesion harvested after 15 days of treatment with PU film, CS, and CS-PS. (A: non-diabetic rat treated by PU film; B: diabetic rat treated by polyurethane (PU) film; C: diabetic rat treated by CS; D: diabetic rat treated by CS-PS.)**
- **Fig. S8. Investigated cell populations of a) IL-6, b) IL-10, and c) TGF-β1 positive cells in the wound tissue after 15 days from wound introduction.**
- **Fig. S9 Bacterial growth on nutrient agar (blue) and cystine-lactose-electrolyte-deficient (CLED) agar collected from diabetic wound surface treated by PU film, CS, and CS-PS in the day of 5, 10, and 15.**
- **Table S2. Diverse anti-biotic susceptibility results of bacteria collected on the diabetic wound on the day 5, 10, and 15.**
- **Fig. S10 Flow cytometry histogram of a) IL-6, b) IL-10, and c) TGF-β1 cells in wound tissues.**

Experimental group	Chitosan	EDC	NHS	HPA	Boc-PS
CS	100	100	25	5	0
CS-PS 7	100	100	25	5	5
CS-PS 44	100	100	25	5	50
CS-PS 56	100	100	25	5	100

Table S1 Feed ratio of each reagent for PS/HPA conjugated chitosan synthesis.

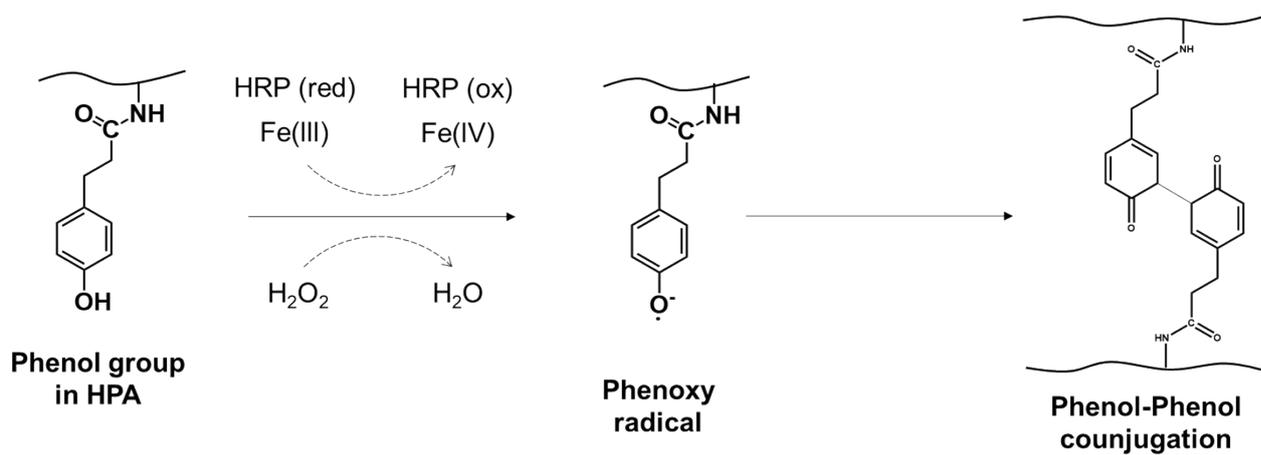


Fig. S1 Schematic diagram for the hydrogel formation of PS/HPA conjugated chitosan through enzyme/catalyst reaction.

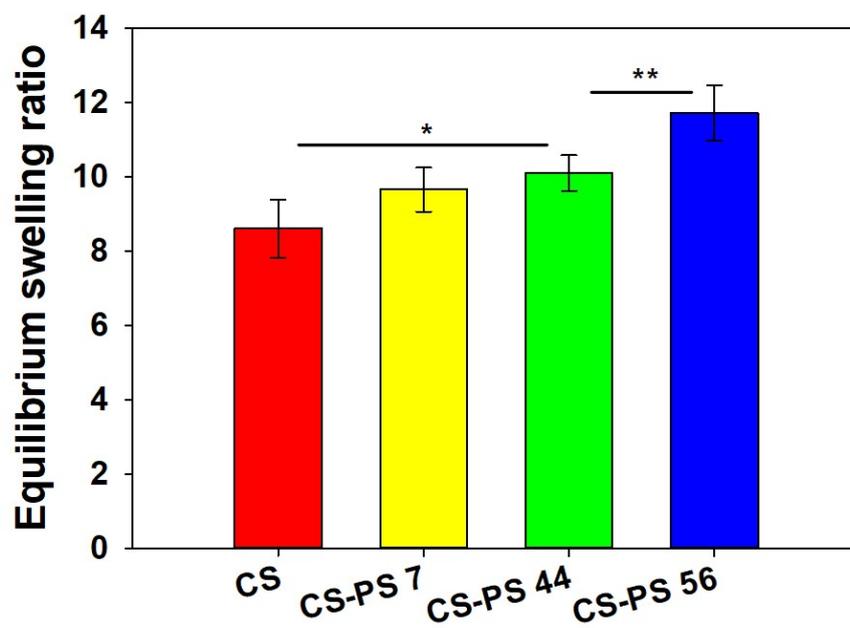


Fig. S2 Equilibrium swelling ratio of the freeze-dried CS hydrogel and CS-PS hydrogels in PBS at 37°C (Mean ± SD, n=8, **: P<0.01).

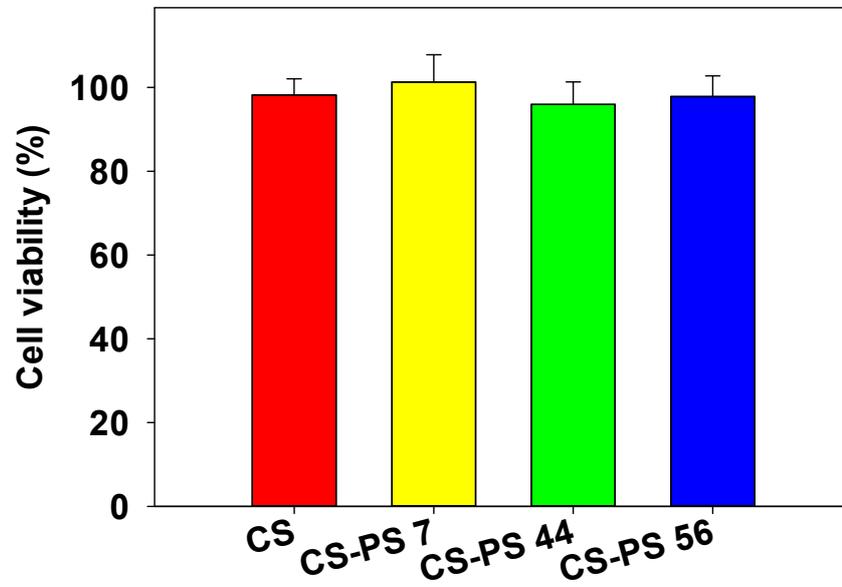


Fig. S3 cell viability of NIH3T3 cell line by CS and CS-PS hydrogels. Protocol was followed ISO-10993 cytotoxicity test. (Mean \pm SD, n=6)

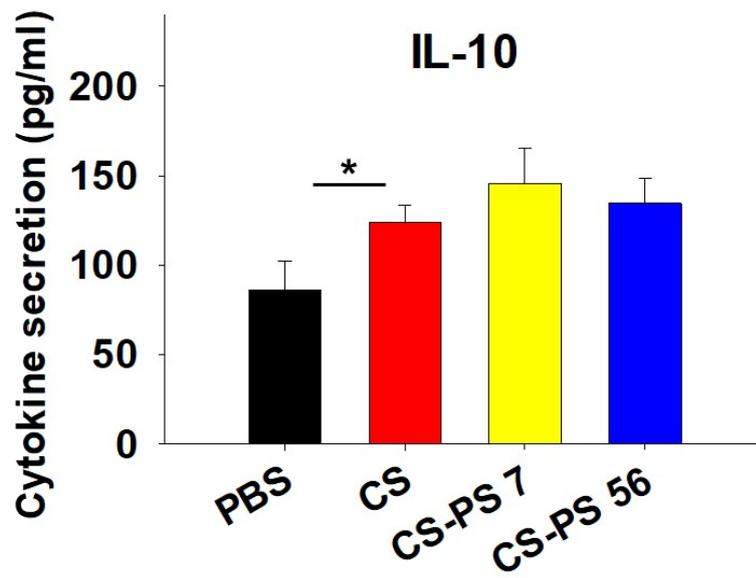


Fig. S4 Cytokine secretion of IL-10 from macrophage treated by CS and CS-PS hydrogels. (Mean \pm SD, n=8)

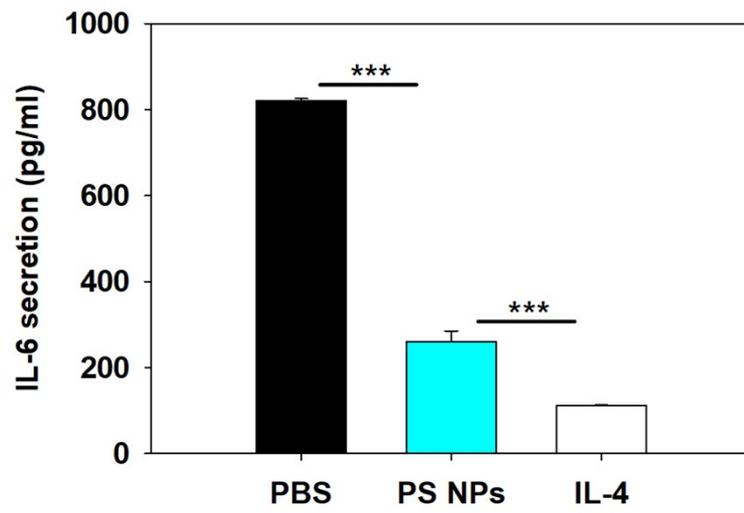


Fig. S5. Cytokine secretion of the pro-inflammatory cytokine IL6 treated by PS nanoparticle, CS, and CS-PS. (Mean \pm SD, n=8, *: p<0.001)**

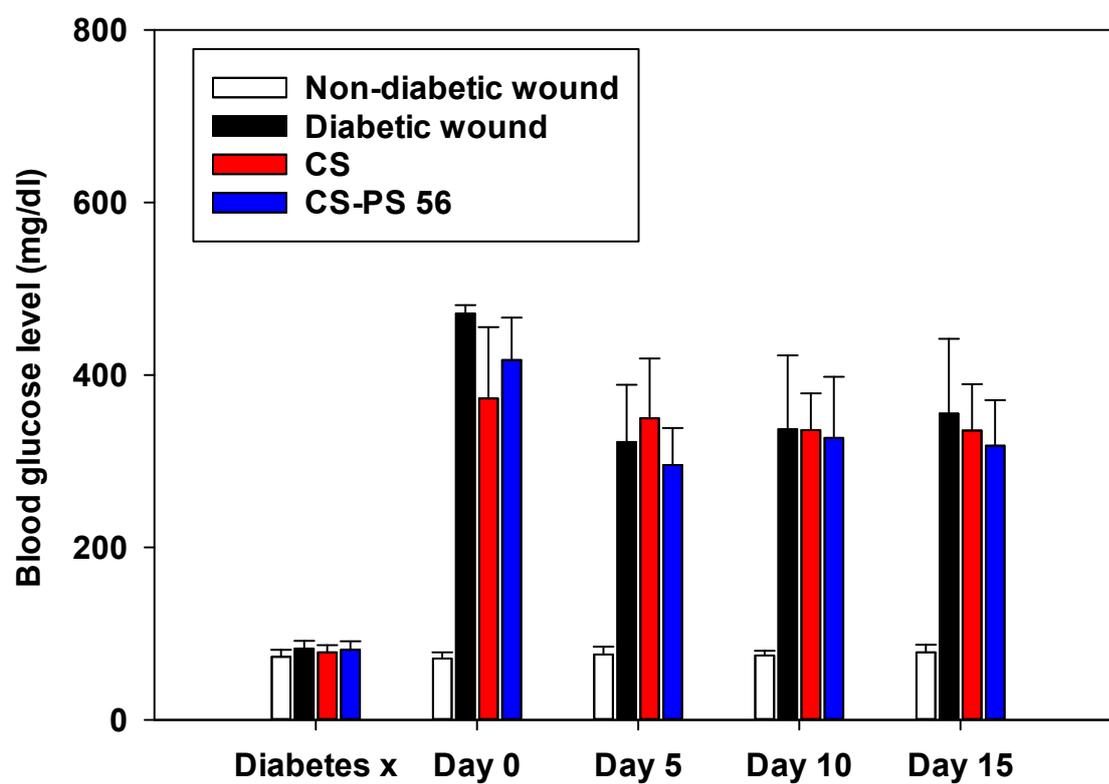


Fig. S6 Blood glucose level of rats before the introduction of diabetes and during wound healing.

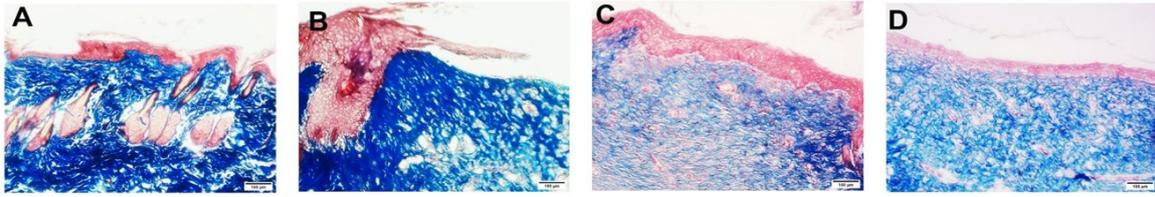


Fig. S7 Masson's trichrome histological photomicrographs of wound lesion harvested after 15 days of treatment with PU film, CS, and CS-PS. (A: non-diabetic rat treated by PU film; B: diabetic rat treated by polyurethane (PU) film; C: diabetic rat treated by CS; D: diabetic rat treated by CS-PS.)

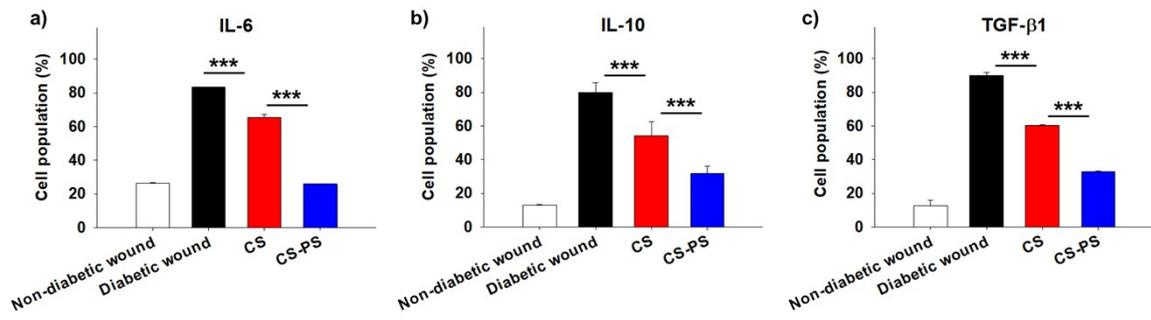


Fig. S8. Investigated cell populations of a) IL-6, b) IL-10, and c) TGF-β1 positive cells in the wound tissue after 15 days from wound introduction.

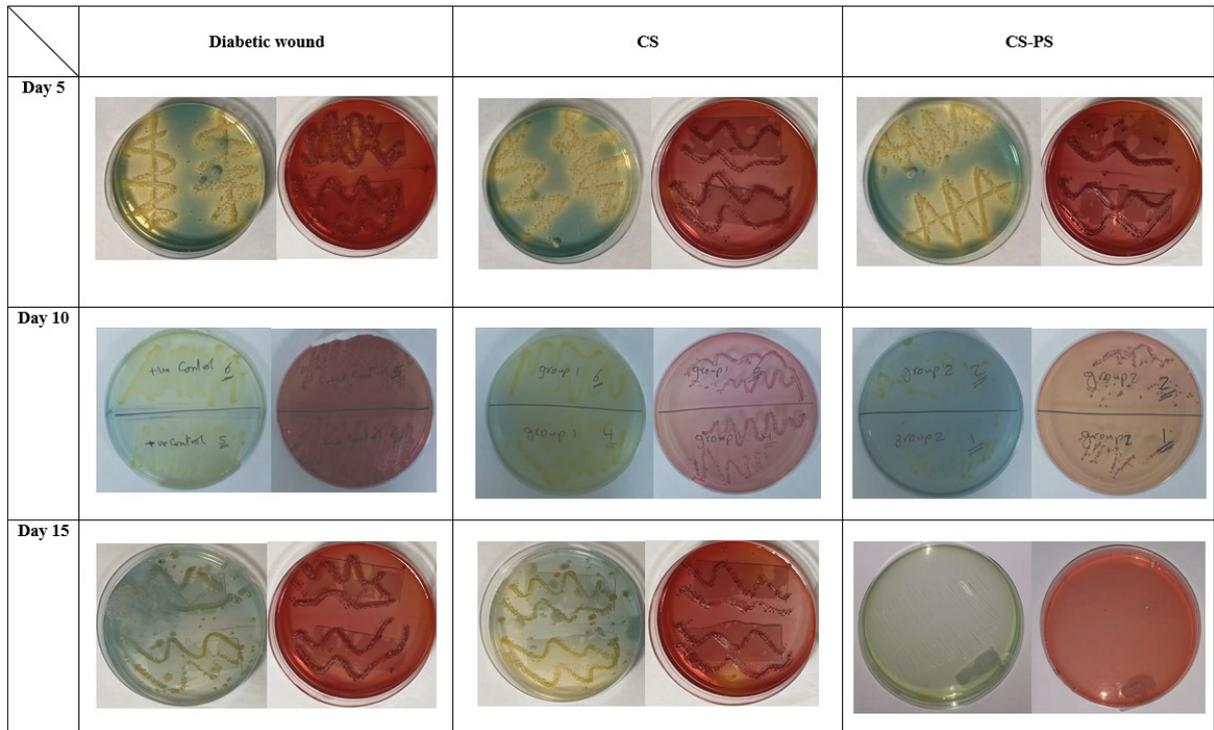


Fig. S9 Bacterial growth on nutrient agar (blue) and cystine-lactose-electrolyte-deficient (CLED) agar collected from diabetic wound surface treated by PU film, CS, and CS-PS in the day of 5, 10, and 15.

	Day 5			Day 10			Day 15		
	Diabetic wound	CS	CS-PS	Diabetic wound	CS	CS-PS	Diabetic wound	CS	CS-PS
Cefaclor	Resistant	Resistant	Resistant	Moderate	Moderate	Moderate	High	High	No Bacterial Growth
Ceftriaxone	Moderate	High	High	High	High	High	High	High	
Cefoperazone	High	High	High	High	High	High	High	High	
Sulbactam + Ampicillin	High	High	High	High	High	High	High	High	
Cefamandole	Moderate	High	Moderate	Resistant	Moderate	Moderate	Resistant	High	
Levofloxacin	Resistant	Moderate	Resistant	Resistant	High	High	High	High	
Cephalexin	High	Resistant	High	Moderate	High	High	High	High	
Vancomycin	Resistant	Resistant	Moderate	Resistant	Moderate	Moderate	Moderate	Moderate	
Azithromycin	Resistant	Moderate	Moderate	Resistant	Resistant	Resistant	Resistant	Resistant	
Aztreonam	Resistant	Resistant	Resistant	Resistant	Resistant	Resistant	Resistant	Resistant	
Erythromycin	Resistant	Resistant	Resistant	Moderate	Resistant	Resistant	Resistant	Resistant	
Nitrofurantoin	Resistant	Resistant	Resistant	Moderate	Resistant	Moderate	Moderate	Moderate	

Table S2. Diverse anti-biotic susceptibility results of bacteria collected on the diabetic wound on the day 5, 10, and 15.

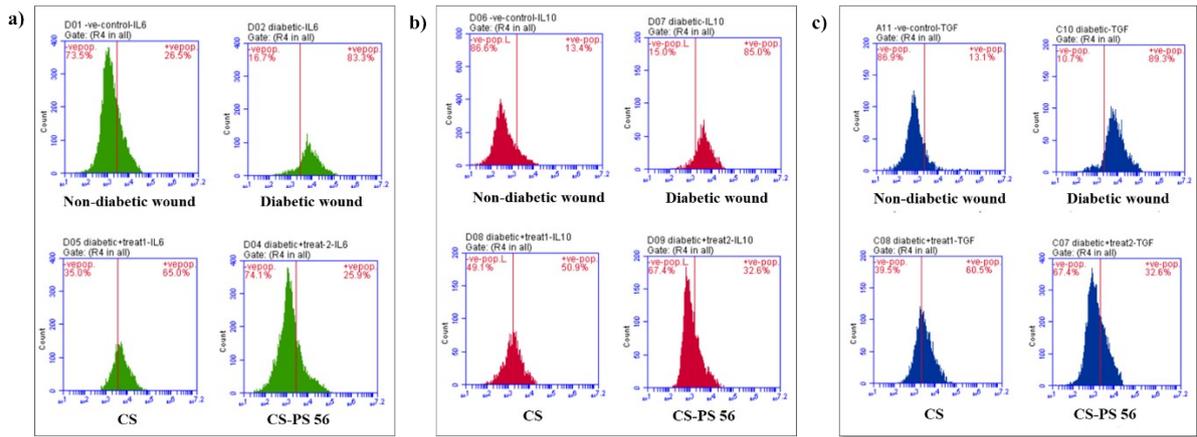


Fig. S10. Flow cytometry histogram of a) IL-6, b) IL-10, and c) TGF-β1 cells in wound tissues.