

Electronic Supporting Information for

**Precisely design of alginate hydrogels crosslinked with microgels for
diabetic wound healing**

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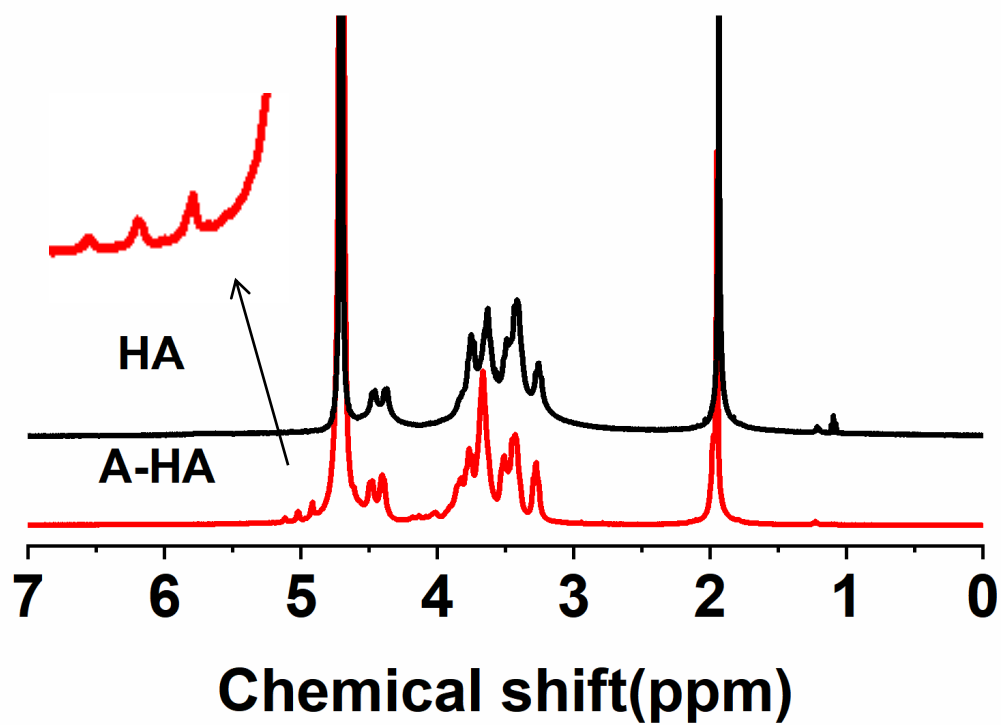


Figure S1 ¹H-NMR spectra of HA and A-HA. Compared with HA, two new peaks at 4.9 ppm and 5.0 ppm were observed on the ¹H-NMR spectrum of A-HA, corresponding to hemiacetalic protons formed from the aldehyde groups and neighboring hydroxyl groups (Li et al., 2014).

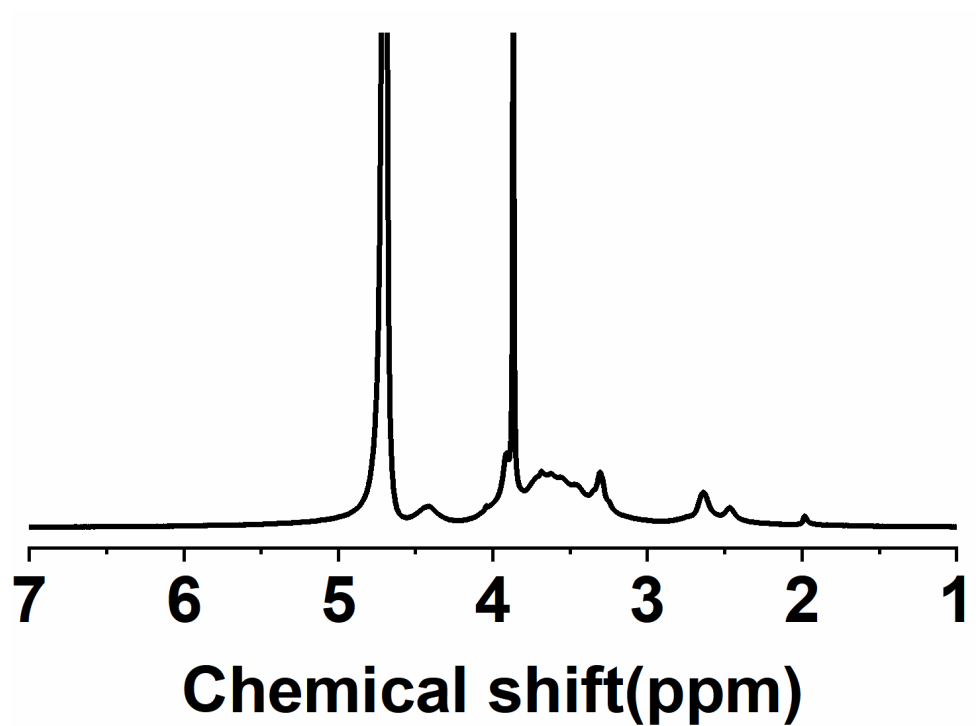


Figure S2 The ^1H -NMR spectrum of CMCS. The signals at 2.7 ppm was corresponded to the carboxymethyl group grafted onto the amino groups (C-2) and hydroxyl groups (C-6).

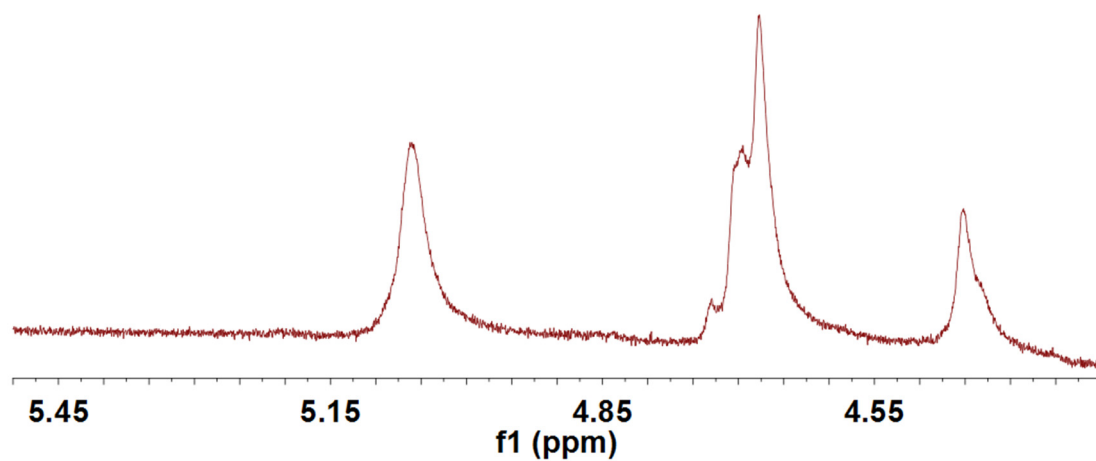


Figure S3 The ^1H -NMR spectrum of alginate. The chemical shifts of the anomeric proton signals were A (G) at around 5.2 ppm; B1 (MGM) at 4.75 ppm; B2 (MG) at 4.71 ppm; B3 (MM) at 4.68 ppm and C (GG) at 4.48 ppm. The ratio of G/M is around 1:2 according to the spectrum.

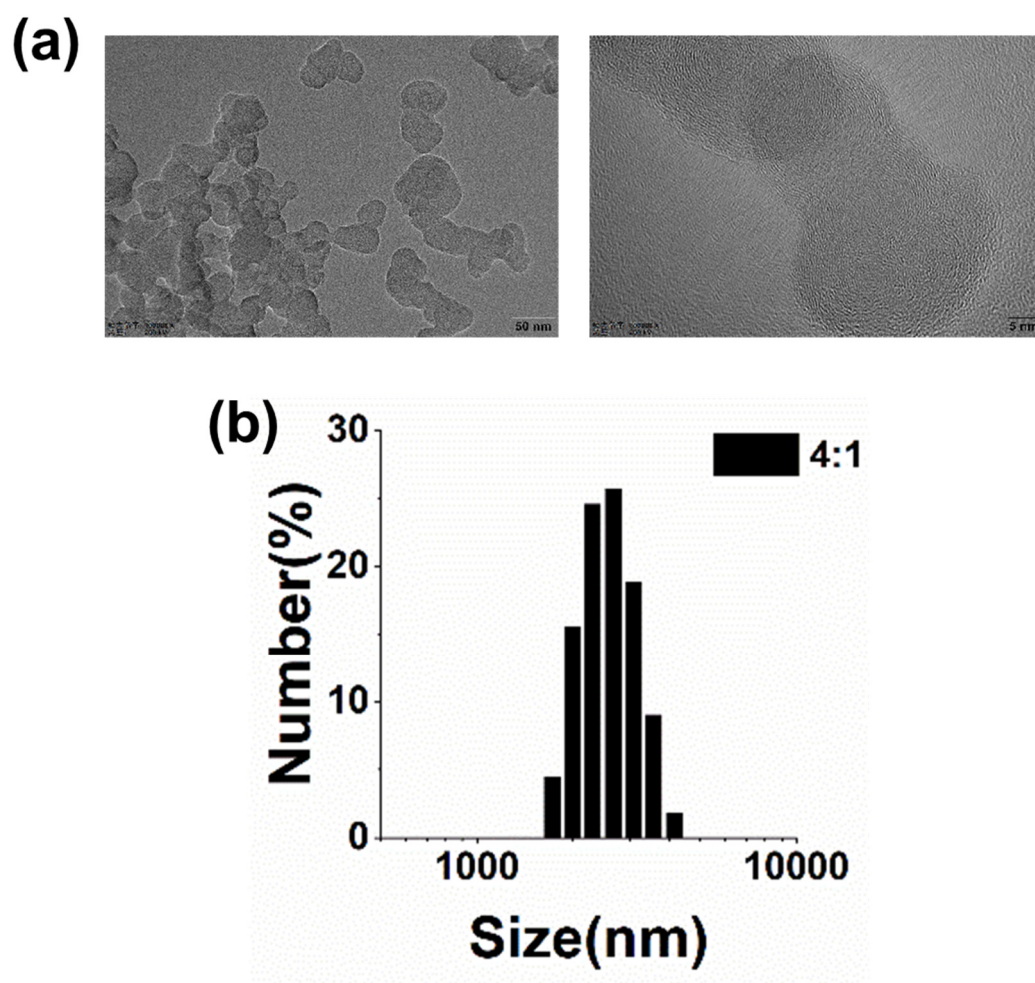


Figure S4 Characterization of the microgels. (a) TEM observations of the microgel morphology. (b) The dynamic diameter of the microgels.

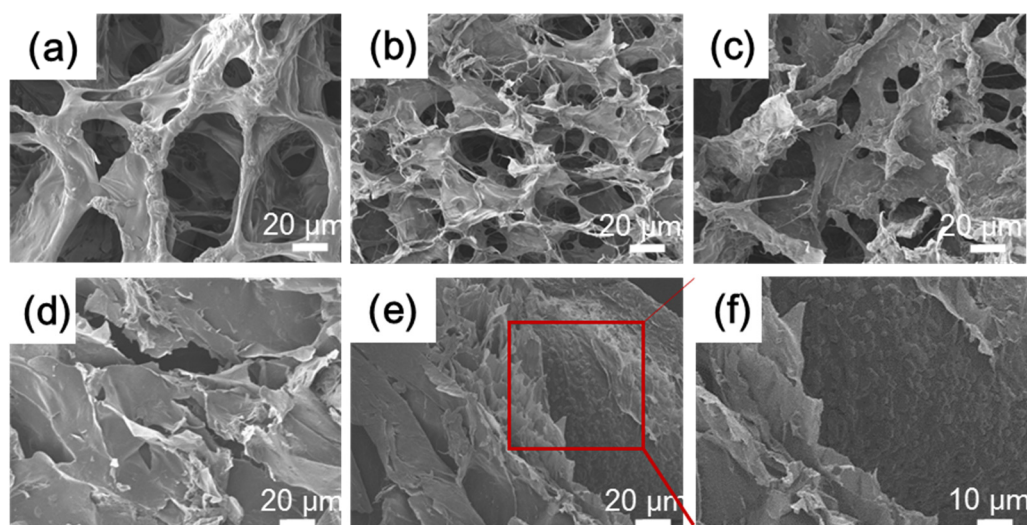


Figure S5 (a–f) Enlarged SEM images of the hydrogels of A (a), B (b), C (c), and D (d). The images of (e) is a side cut of D, local enlarged in (f).

Table S1 The relative molecular weight & distribution of the polysaccharides

	Retention time (Min)	Mn (kDa)	Mw (kDa)	MP (kDa)
HA	13.33	478500	2873700	1511700
A-HA	14.85	105100	287400	225600
CMCS	16.28	23200	41300	37100

Reference

Li, L., Wang, N., Jin, X., Deng, R., Nie, S., Sun, L., . . . Gong, C. (2014). Biodegradable and injectable in situ cross-linking chitosan-hyaluronic acid based hydrogels for postoperative adhesion prevention. *Biomaterials*, 35(12), 3903-3917.