Electronic Supplementary Information for:

Fabrication of highly efficient self-healing hydrogel from natural biopolymers loaded with exosomes for the synergistic promotion of severe wound healing

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Scheme S1 (a) Synthesis of MC-CHO, (b) synthesis of CS-*g*-PEG and (c) Schiff base formation between aldehyde in MC-CHO and amino in CS-*g*-PEG.



Fig. S1 FT-IR spectra of (a) MC and (b) MC-CHO.

The newly appeared peaks at 1664 cm⁻¹ (carbonyl) and 1257 cm⁻¹ (ethers) were observed in MC-CHO (Fig. S1b), which is different to the one of pure MC (a), indicating that the successful preparation of MC-CHO.



Fig. S2 ¹H NMR spectrum of the CS-g-PEG.

The new signals at 3.20-3.90 ppm should be assigned to the protons in PEG chains, indicated the successful grafting of PEG to the CS backbones. The substitution degree of PEG (DS_{PEG} , defined as the moles of PEG per mole of glucose units) was calculated by Equation (1)

$$DS_{PEG} = \frac{a}{l * (1 - 90\%)} *_{100\%}$$
(1)