

Supporting Information

Vascularized nanocomposite hydrogel mechanically reinforced by polyelectrolyte-modified nanoparticles

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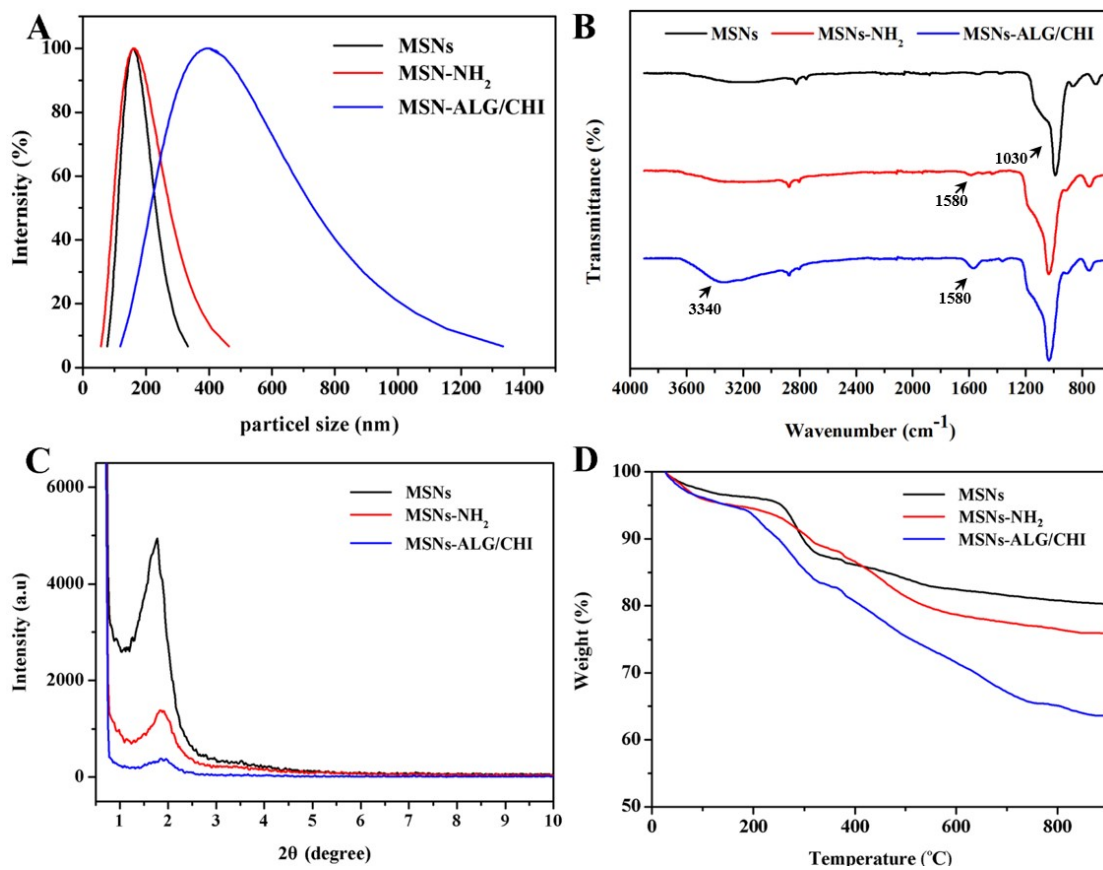


Figure S1. Characterization of the synthesized MSNs, MSNs-NH₂ and MSNs-ALG/CHI. (A) Curves of particle size distribution, (B) FTIR spectra, (C) XRD patterns, and (D) TGA curves.

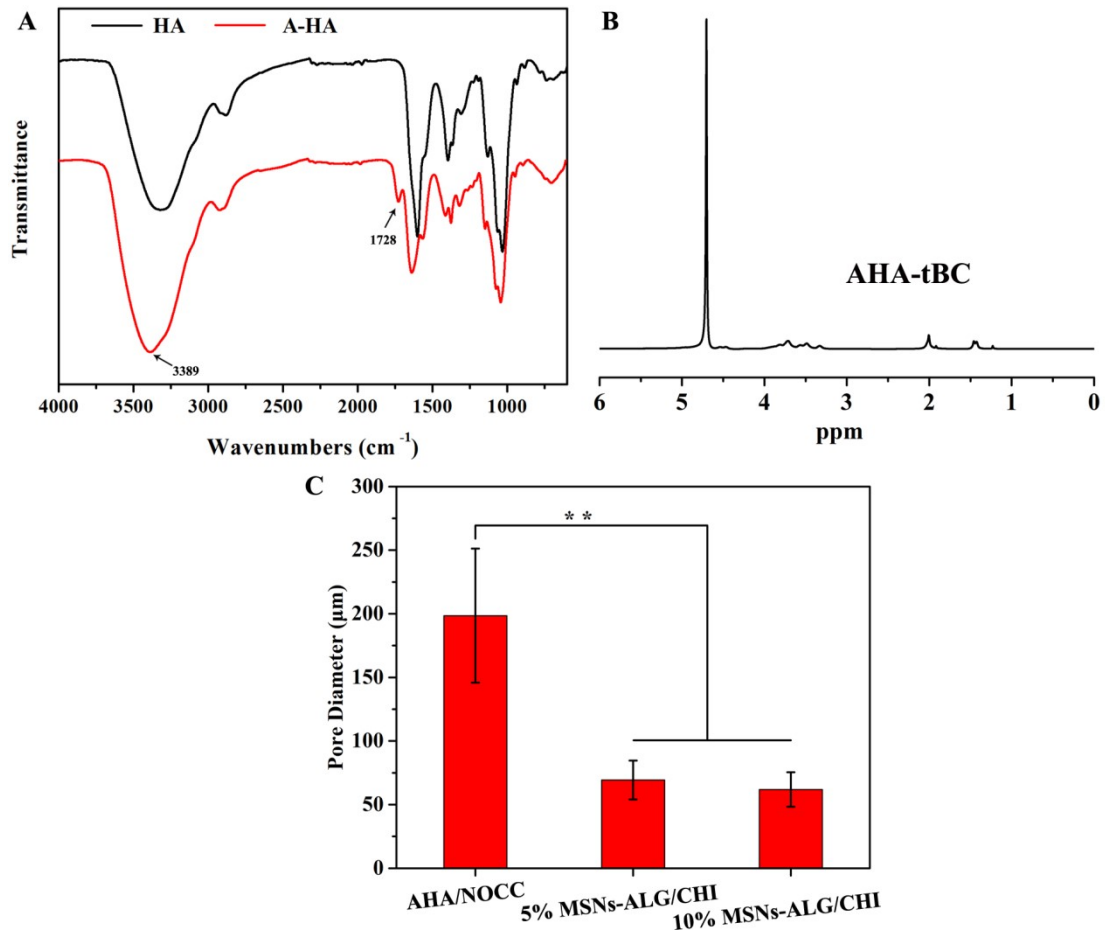


Figure S2. (A) FTIR spectra of HA and AHA, (B) ^1H NMR spectra of AHA-tBC. (C) Pore size distribution of AHA/NOCC hydrogel, 5%MSNs/AHA/NOCC hydrogel and 10%MSNs/AHA/NOCC hydrogel (The pore size distribution of AHA/NOCC and nanocomposite hydrogels in each sample was quantitatively measured using ImageJ software, $n = 100$). $**p < 0.01$.

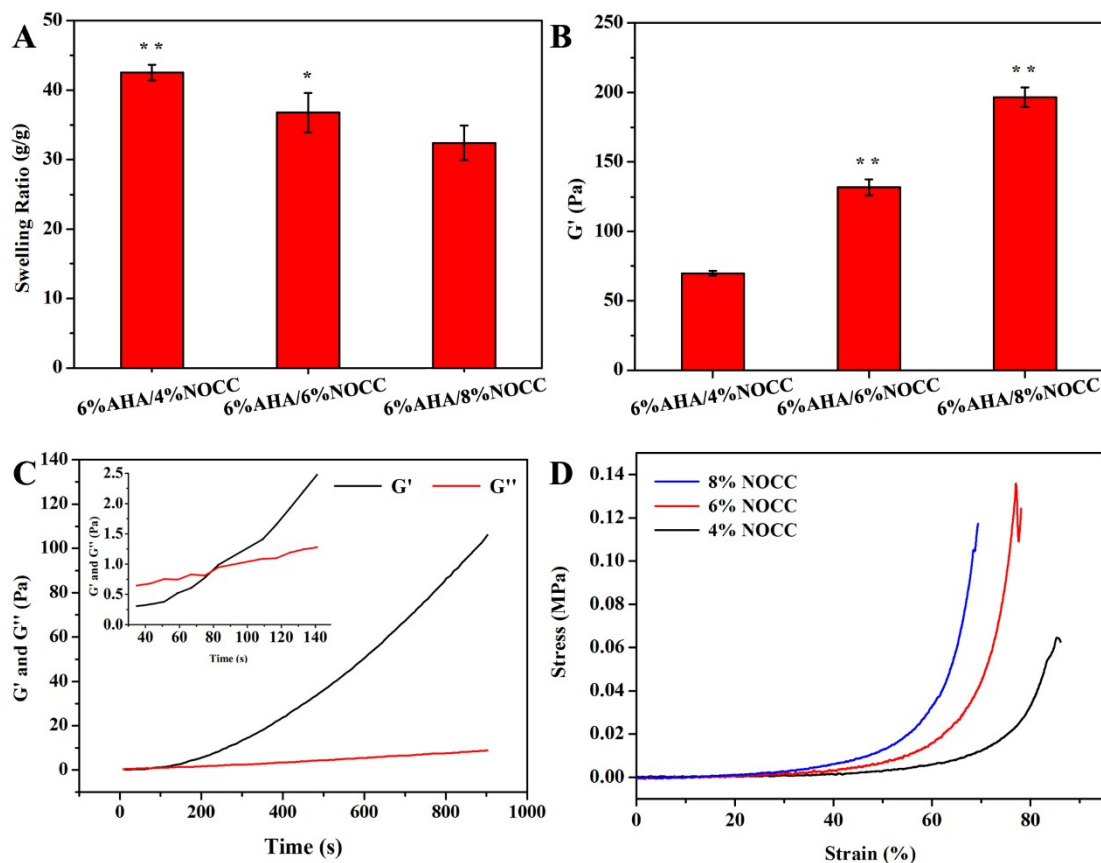


Figure S3. Characterization of hydrogels. (A) Swelling ratio of AHA/NOCC hydrogels prepared with different NOCC concentrations, $*p < 0.05$, $**p < 0.01$, compared to 6%AHA/8%NOCC hydrogel. (B) Average G' of AHA/NOCC composites prepared with different NOCC concentrations, $**p < 0.01$, compared to 6%AHA/4%NOCC hydrogel. (C) Dynamic rheological test of 6%AHA/6%NOCC hydrogel. (D) Compression properties of AHA/NOCC hydrogels prepared with different NOCC concentrations.

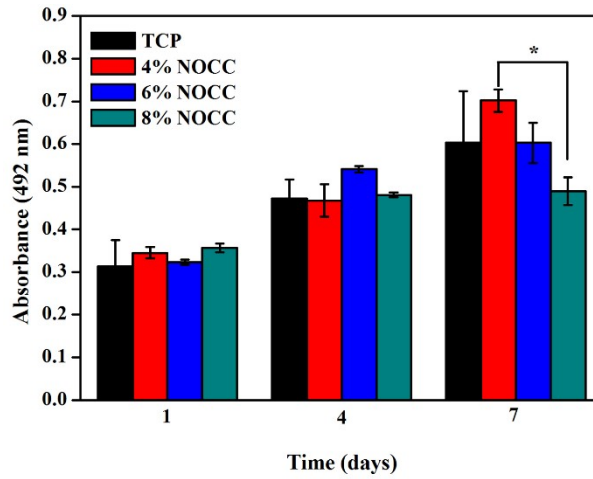


Figure S4. Cell proliferation of BMSCs cultured on the surface of AHA/NOCC hydrogels prepared with different NOCC concentrations and TCP for 1, 4, and 7 days. * $p < 0.05$.

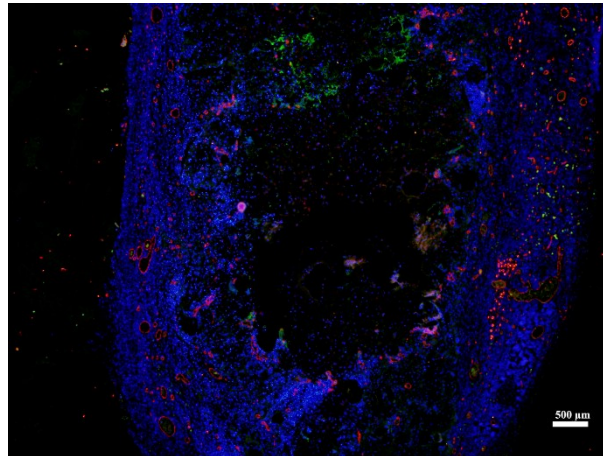


Figure S5. Immunofluorescence staining of CD31 (red) and vWF (green) expression after S1P-loaded nanocomposite hydrogels combined with macroporous scaffold (vertical section) implanted subcutaneously in mice for 3 weeks.