Supplementary Material

A Synergistic Antibacterial Platform Combining Low−Temperature Photothermal Therapy and Antibiotic Therapy

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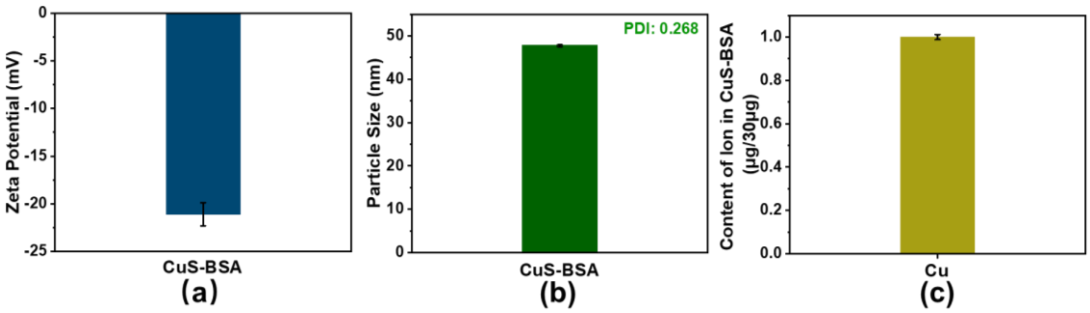

Figure S1. Characterization of CuS-BSA. (**a**) Zeta potential of CuS-BSA. (**b**) Particle size distribution of CuS-BSA in PBS. (**c**) Cu content in CuS-BSA.

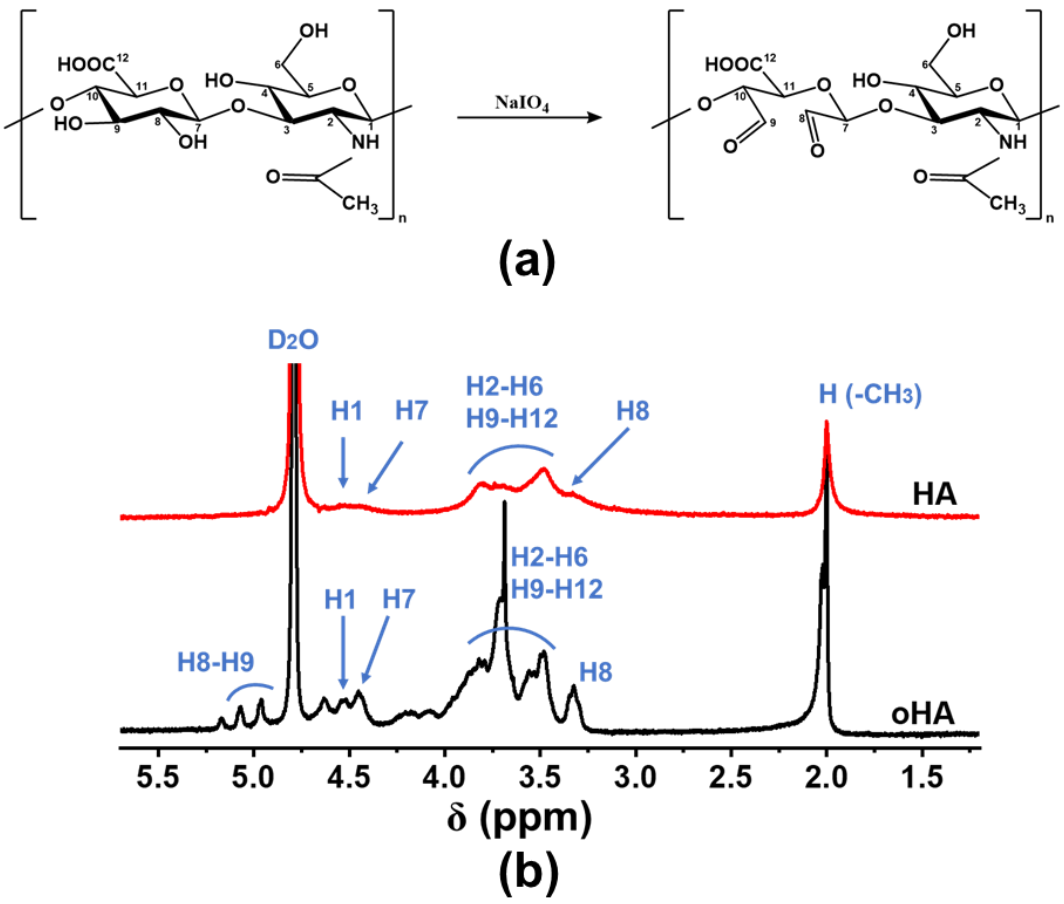

Figure S2. Characterization of oHA and HA. (**a**) Synthesis process of oHA. (**b**) NMR spectra and the corresponding peak assignment of oHA and HA.

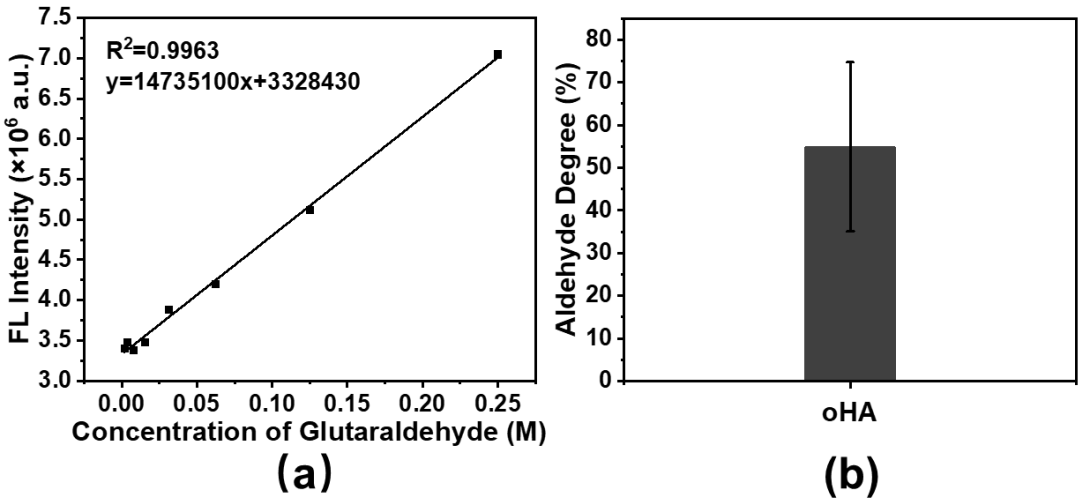

Figure S3. Calculation of aldehyde degree of oHA. (**a**) Linear regression curve of FL intensity with the concentration of glutaraldehyde. (**b**) Aldehyde degree of oHA.

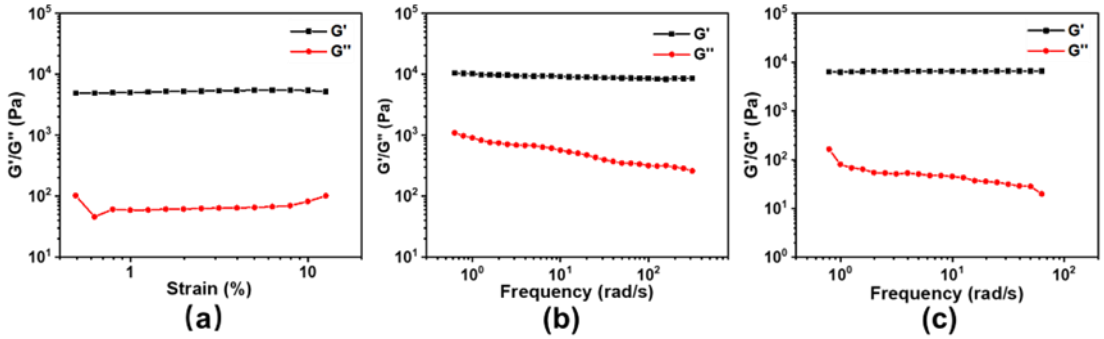

Figure S4. Rheological tests of Gel. (**a**) Plot of G′ (elastic modulus) and G′′ (loss modulus) versus oscillation strain (0.5-12.5 %) at room temperature. (**b**) Plot of G′ and G′′ versus frequency (1–300 rad/s) at 4 ℃. (**c**) Plot of G′ and G′′ versus frequency (1–60 rad/s) at 45 ℃.

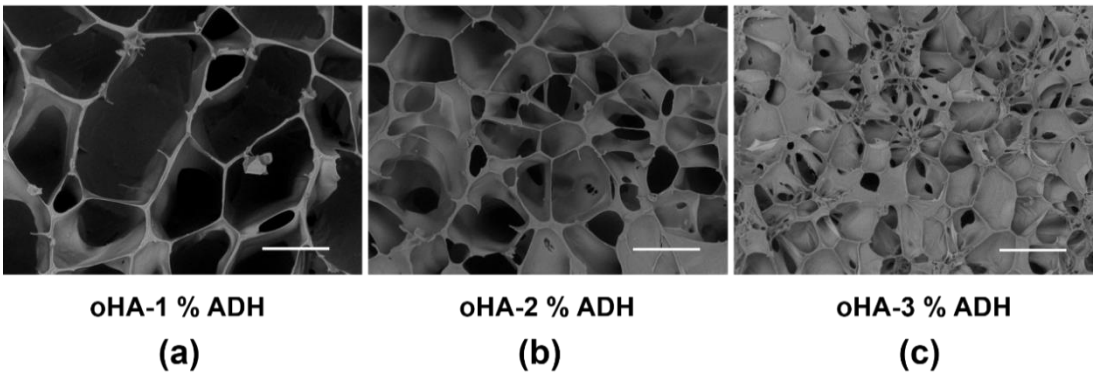

Figure S5. SEM images of Gel with different ADH concentrations of (**a**) 1 %, (**b**) 2 % and (**c**) 3 %, respectively. Scale bar: 100 μm.

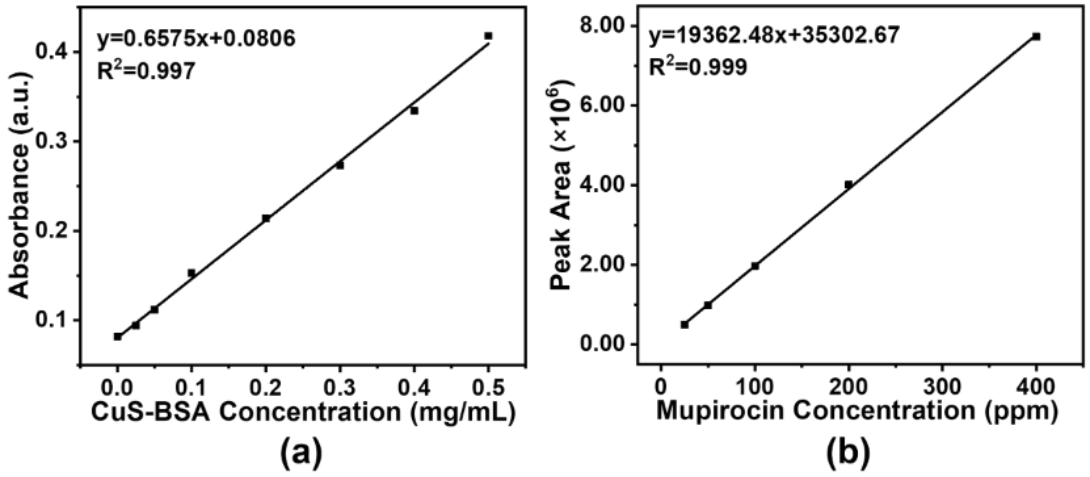

Figure S6. Standard curve of CuS-BSA and mupirocin. (**a**) Calibration curve of UV-vis absorbance versus different CuS-BSA concentrations of 0, 0.025, 0.05, 0.1, 0.2, 0.3, 0.4 and 0.5 mg/mL, respectively. (**b**) Calibration curve of peak area versus different mupirocin concentrations of 25, 50, 100, 200 and 400 ppm, respectively.

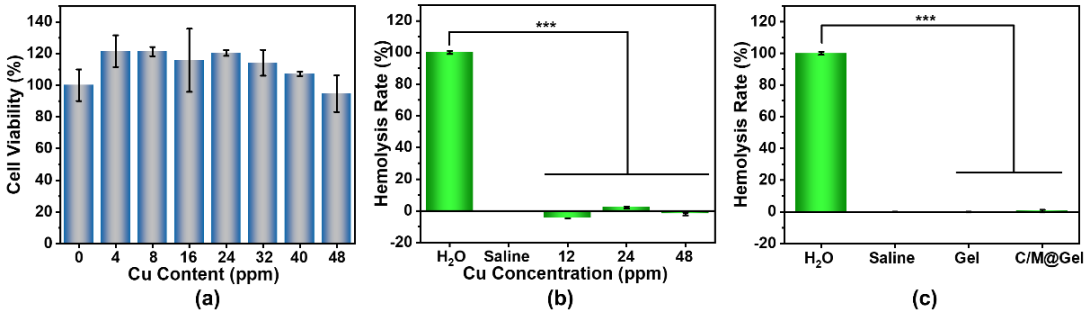

Figure S7. Biocompatibility of CuS-BSA and C/M@Gel. (**a**) Cell viability of CuS-BSA with different Cu concentrations of 0, 4, 8, 16, 24, 32, 40 and 48 ppm, respectively. (**b**) Hemolysis rates of RBCs after different treatments of H_2O, saline and CuS-BSA with different Cu concentration of 12, 24 and 48 ppm, respectively. (**c**) Hemolysis rates of RBCs after different treatments of H_2O, saline, Gel and C/M@Gel. (Error bar: mean ± SD, ***$P < 0.001$).

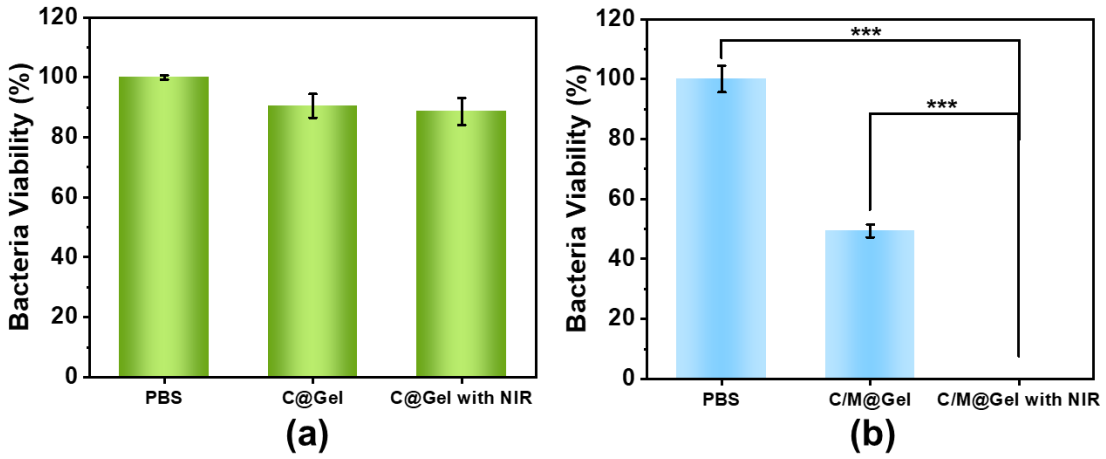

Figure S8. Comparation of bacteria viability in different groups with or without NIR irradiation. (**a**) The survival percentage of bacteria after incubating with PBS, C@Gel and C@Gel with NIR. (**b**) The survival percentage of bacteria after incubating with PBS, C/M@Gel and C/M@Gel with NIR. NIR irradiation time: 5 min, mupirocin concentration in C/M@Gel: 0.125 ppm, Cu concentration in C@Gel and C/M@Gel: 24 ppm. (Error bar: mean ± SD, ***P < 0.001).

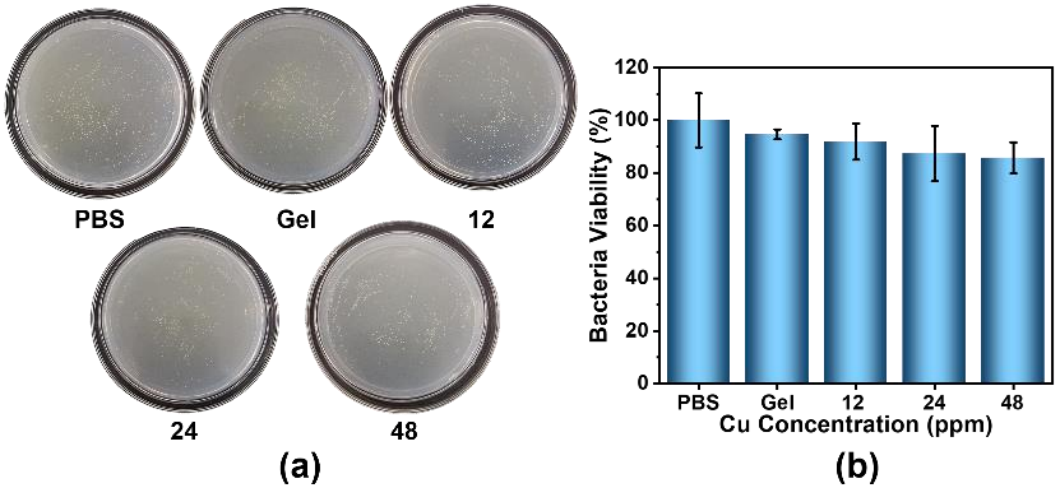

Figure S9. Antibacterial efficacy of C@Gel *in vitro*. (**a**) The results of standard plate counting and (**b**) the corresponding survival percentage of bacteria after incubating with PBS, Gel and C@Gel with different Cu concentrations of 12, 24 and 48 ppm, respectively.

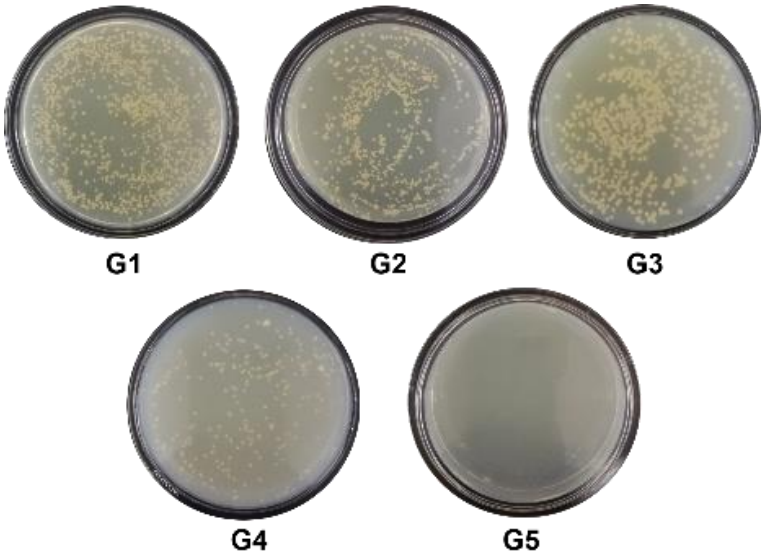

Figure S10. Standard plate counting of residual bacteria at the wound site after four consecutive days of mono/synergistic therapy. G1: PBS, G2: Gel, G3: C@Gel+NIR, G4: M@Gel, G5: C/M@Gel+NIR. Mupirocin concentration in M@Gel and C/M@Gel: 0.125 ppm, Cu concentration in C@Gel and C/M@Gel: 24 ppm.