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Supporting Information

Cholesteroled polymer (Chol-b-Lys)-based nanoparticles (CL-NPs) confer antibacterial efficacy without resistance

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Proton Nuclear Magnetic Resonance (^{1}H NMR)

The NMR spectrum was recorded on a Bruker AV 400 MHz spectrometer, using tetramethylsilane as an internal standard and DMSO-d_6 as solvent. The sample concentration was ca. 10 mg/mL.

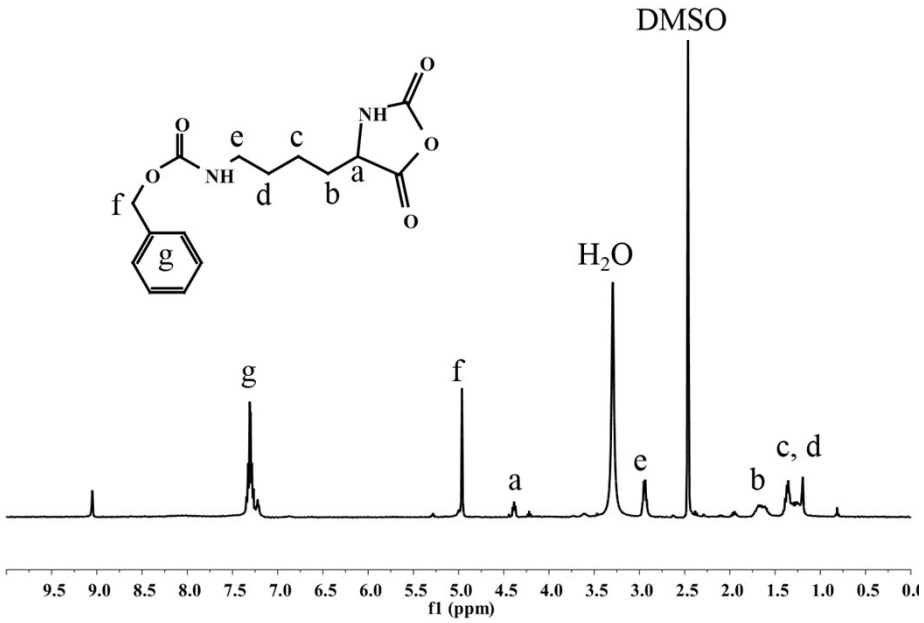

Fig. S1 ^{1}H NMR spectrum of L-Lys-Cbz-NCA in DMSO-d_6

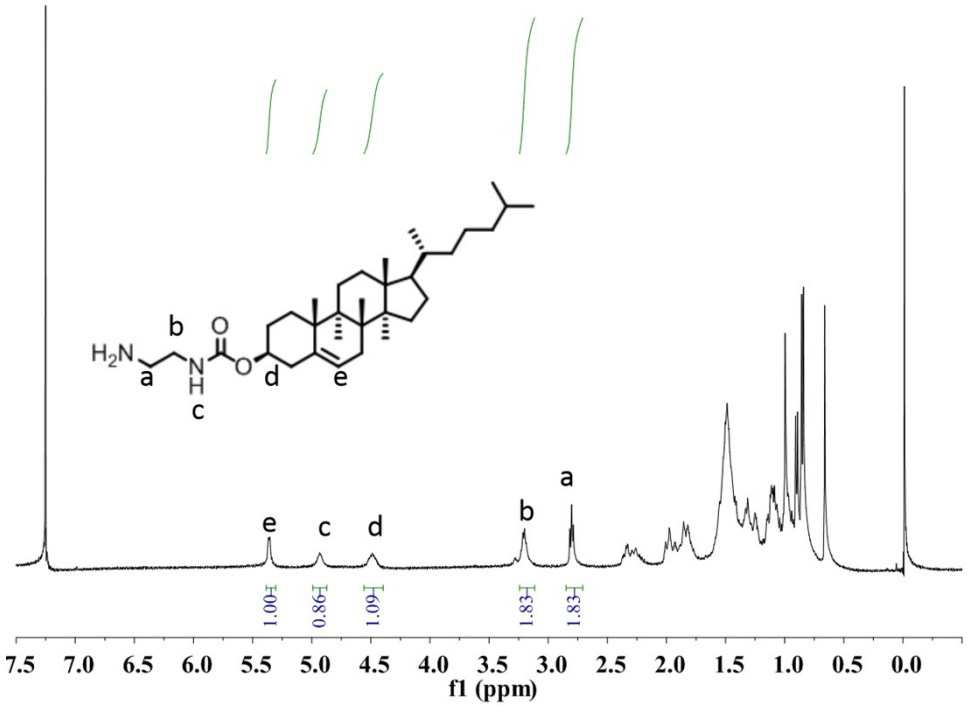

Fig. S2 ^{1}H NMR spectrum of Chol-NH_2 in CCl_3-d

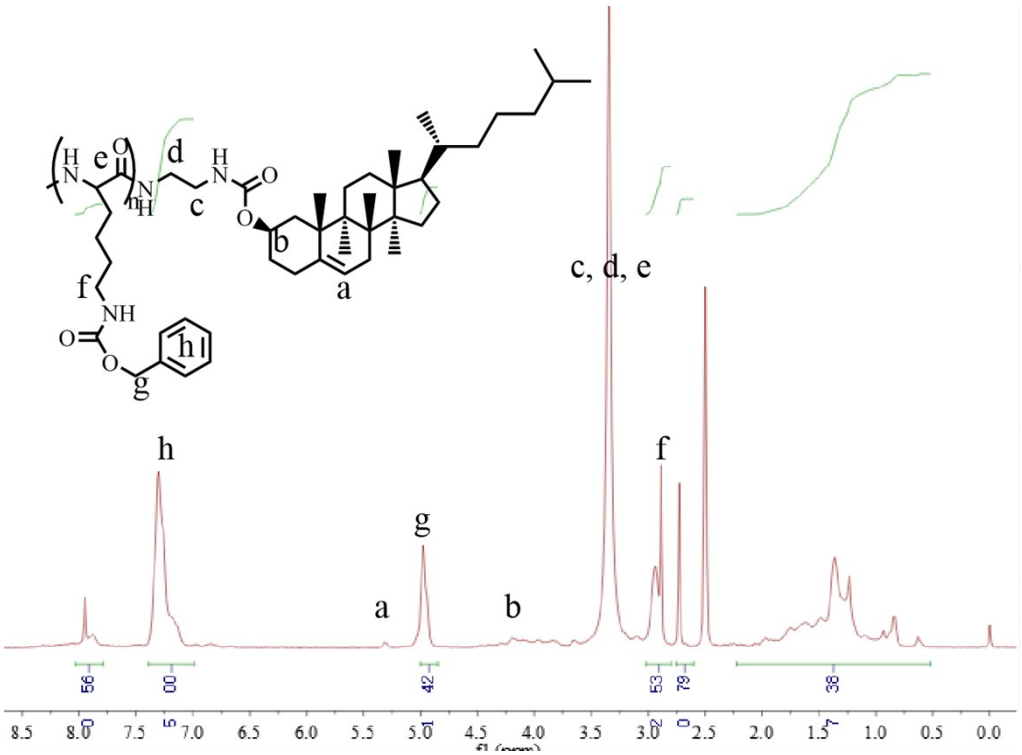

Fig. S3 ^{1}H NMR spectrum of Chol-*b*-Lys-Cbz in DMSO-d_6

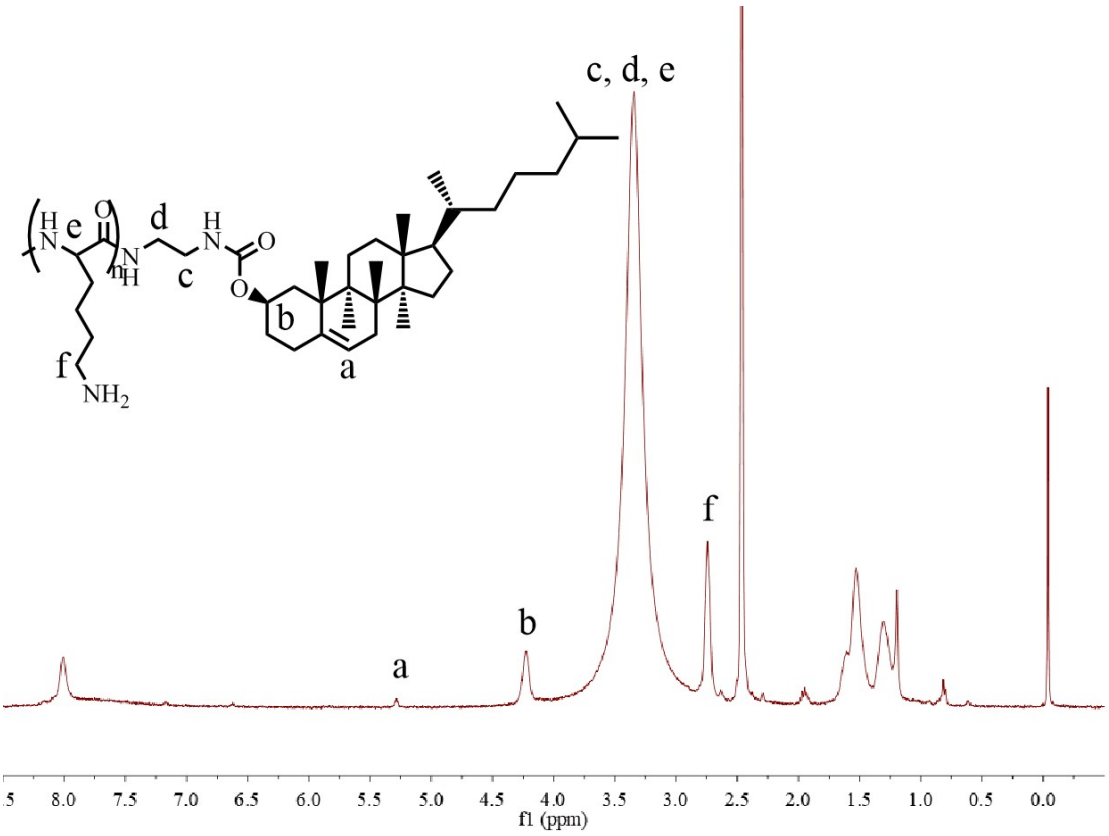

Fig. S4 ^{1}H NMR spectrum of Chol-*b*-Lys in DMSO-d_6

Dynamic light scattering apparatus (DLS)

Measurement of particle size Distribution Polymer Micellar solution was carried out by dynamic light scattering apparatus (DLS) on a Malvern Zetasizer Nano-ZS at a fixed scattering angle of 90°. Measured with polymer concentration of 1 mg/mL for sample preparation.

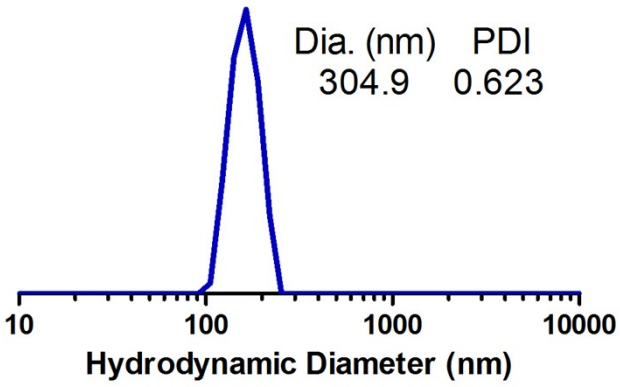

Fig. S5 DLS studies of CL-NPs (by intensity) in water

Formulation of M9 medium

$MgSO_4$ (1 M), $CaCl_2$ (1 M) and $ZnSO_4$ (1 M) were dissolved in double distilled water (10 mL), respectively, and autoclaved for later use. 5×M9 salt solution, including $Na_2PO_4 \cdot 7H_2O$, KH_2PO_4, NaCl and NH_4Cl, was dissolved in 200 ml of double distilled water and sterilized at 121 ℃ for 15 min. Then a 20% glucose solution was prepared with sterilized at 115 ℃ for 15 min.

Aseptic preparation of M9 medium (1000 mL): 5×M9 salt solution (200 mL), 1 M $MgSO_4$ (2 mL)，1 M $CaCl_2$ (0.1 mL), 1 M $ZnSO_4$ (0.1 mL) and 20% glucose solution (20 mL) were mixed, and the sterilized double distilled water was added to the mixture to reach a total volume of 1000 mL.

Scanning electron microscopy (SEM)

The morphology of the microorganisms before and after treatment with polymer was observed using a field emission SEM (SU8010) operated at an accelerating voltage of 3.0 keV. Samples were treated with gold before observation.

Zeta potential

Zeta potentials were measured on a Water Nano-ZS 90 Nanosizer (Malvern Instrument) at a fixed scattering angle of 90° at room temperature.