Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Quinine-based quaternized polymer: A potent scaffold with bactericidal properties 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.

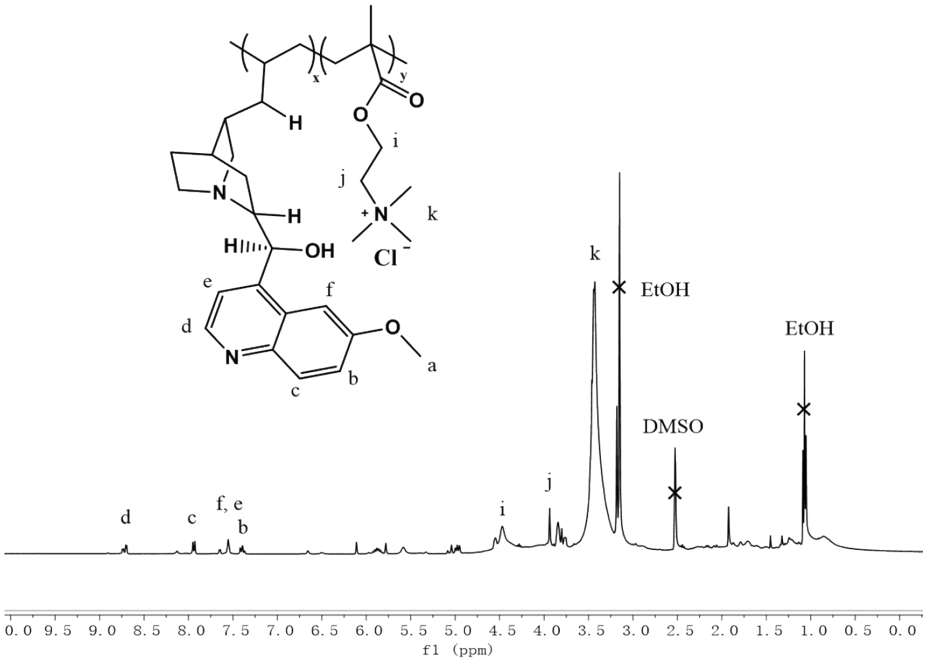

Fig. S1 ^{1}H NMR spectrum of QMTA in DMSO-d_6

Gel permeation chromatography (GPC)

The molecular weight and polydispersity index of polymer were determined on a gel permeation chromatography (GPC) instrument equipped with two Plgel 5 mm Mixed-D column. With aqueous solution used as the eluent with a flow rate of 1 mL/min, the polymer was centrifuged and filtered prior to experiments.

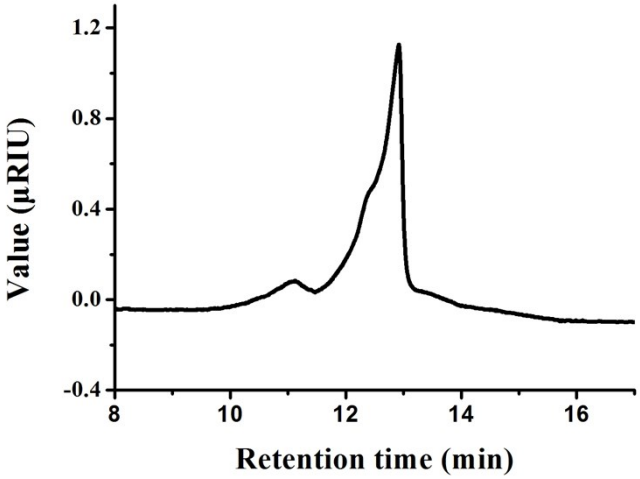

Fig. S2 The GPC trace of QMTA

Table S1 The GPC value of QMTA in aqueous solution

Polymer	**QMTA**
M_w	46441
M_w/M_n	1.24

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.