Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information

Ruthenium terpyridine complexes based on dppz ligands as photodynamic antimicrobial agents against *Staphylococcus aureus*

Supplementary Figures

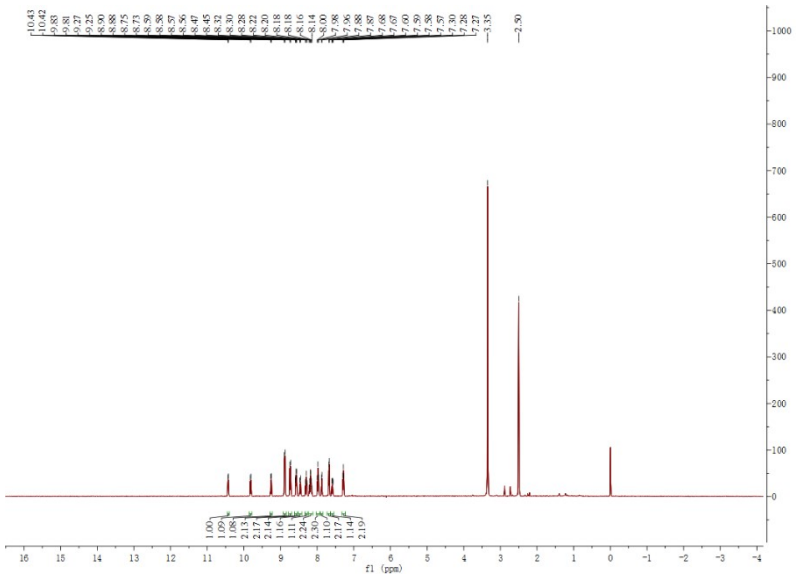

Figure S1 ^{1}H NMR spectrum of the **Ru1**.

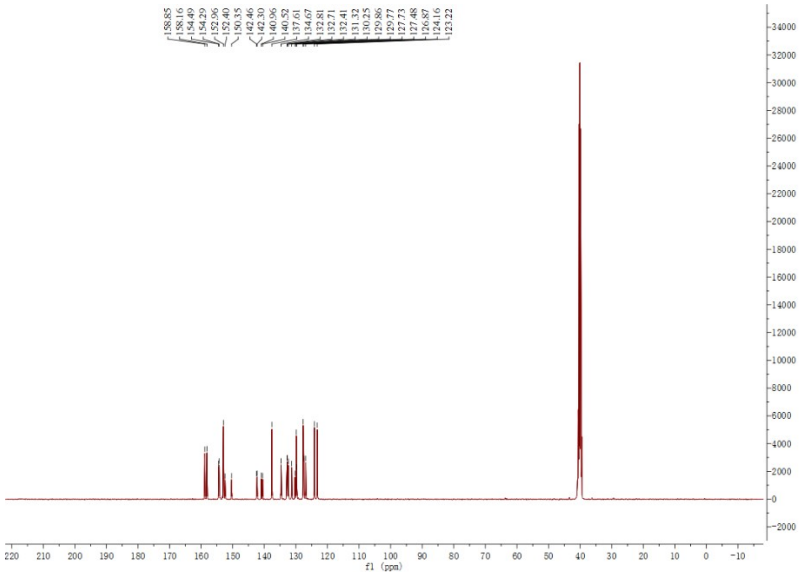

Figure S2 ^{13}C NMR spectrum of the **Ru1**.

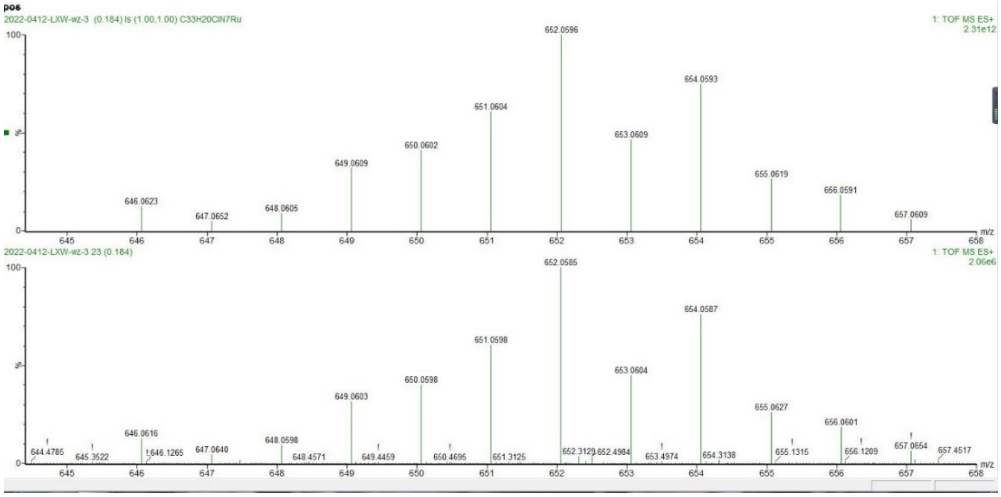

Figure S3 HRESI-MS spectrum of the Ru1.

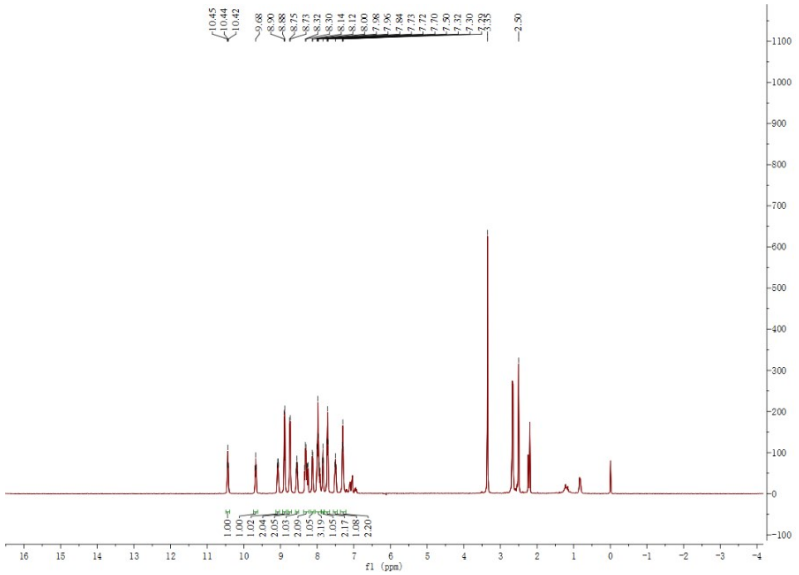

Figure S4 ^{1}H NMR spectrum of the **Ru2**.

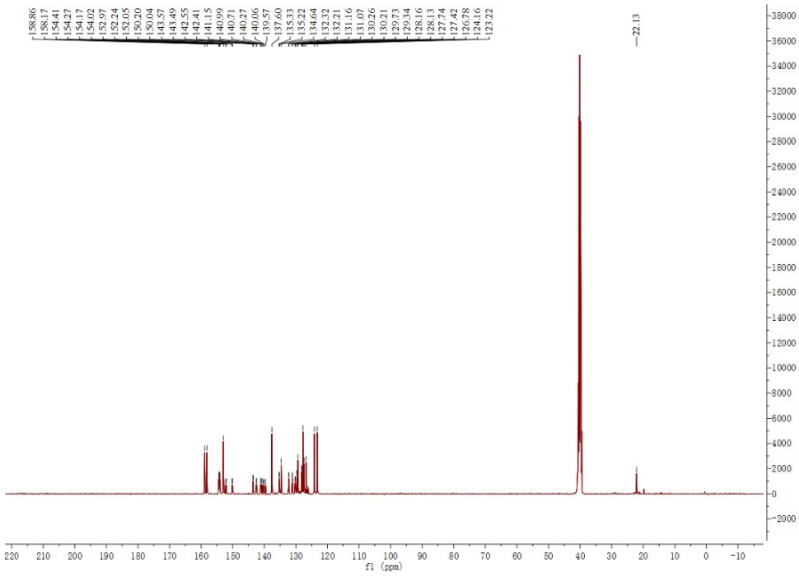

Figure S5 ^{13}C NMR spectrum of the **Ru2**.

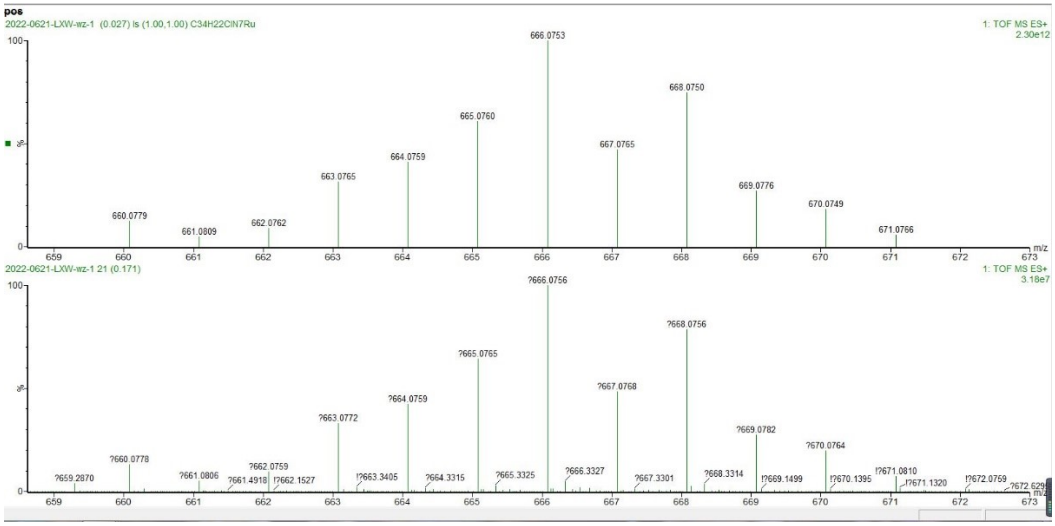

Figure S6 HRESI-MS spectrum of the **Ru2**.

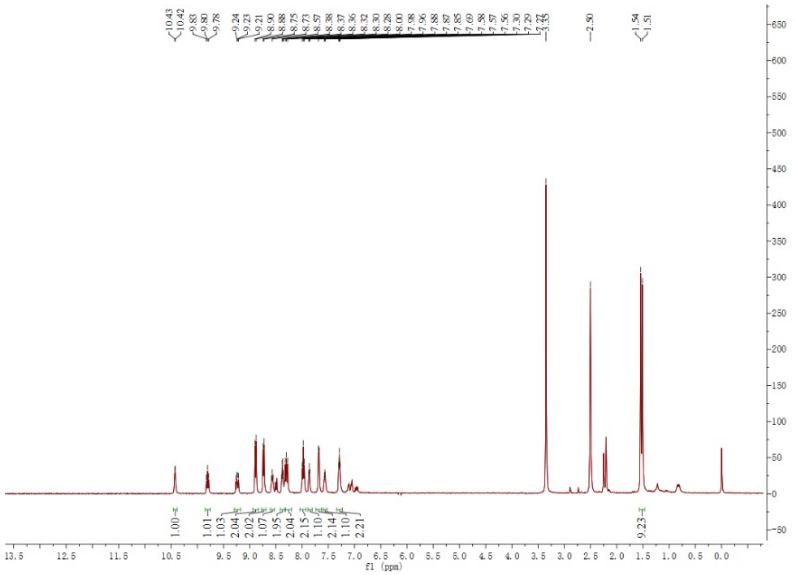

Figure S7 ^{1}H NMR spectrum of the **Ru3**.

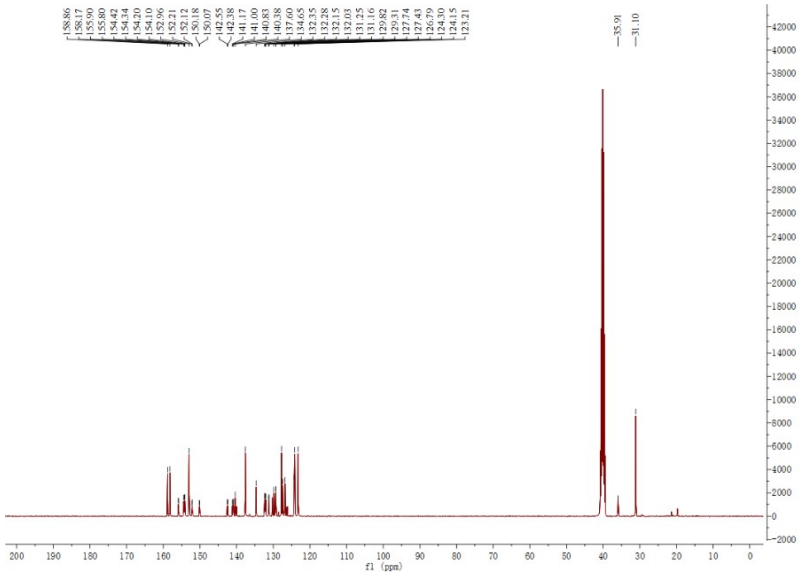

Figure S8 ^{13}C NMR spectrum of the **Ru3**.

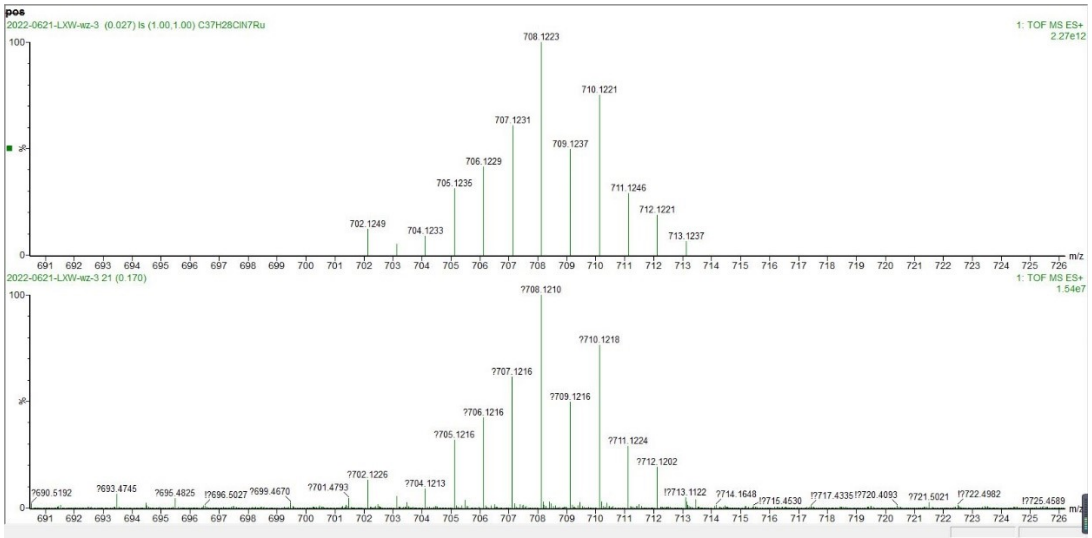

Figure S9 HRESI-MS spectrum of the **Ru3**.

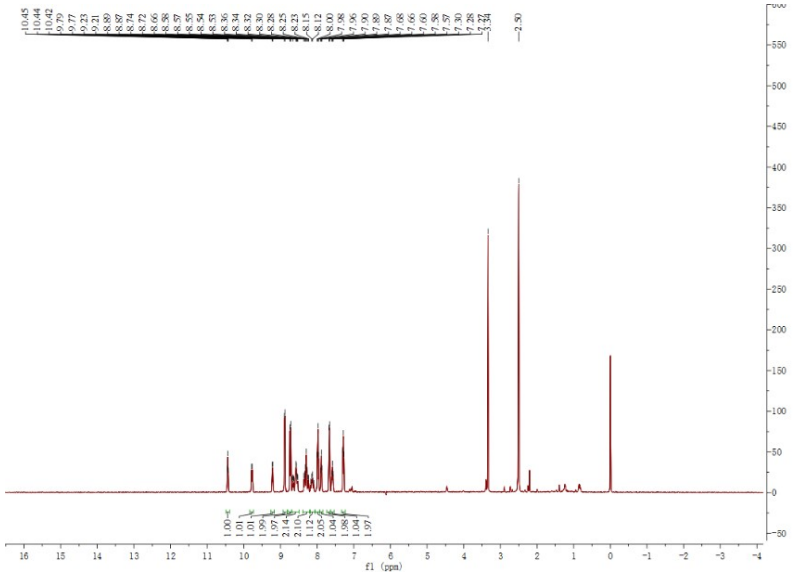

Figure S10 ^{1}H NMR spectrum of the **Ru4**.

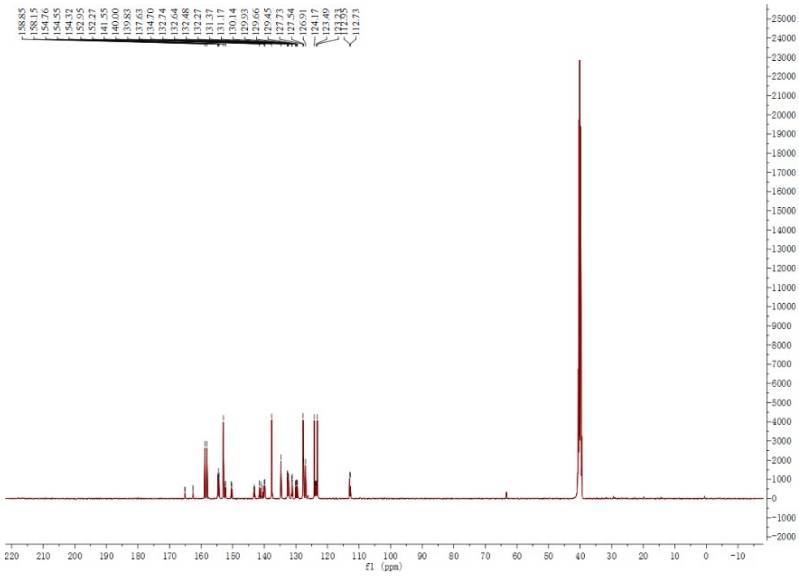

Figure S11 ^{13}C NMR spectrum of the **Ru4**.

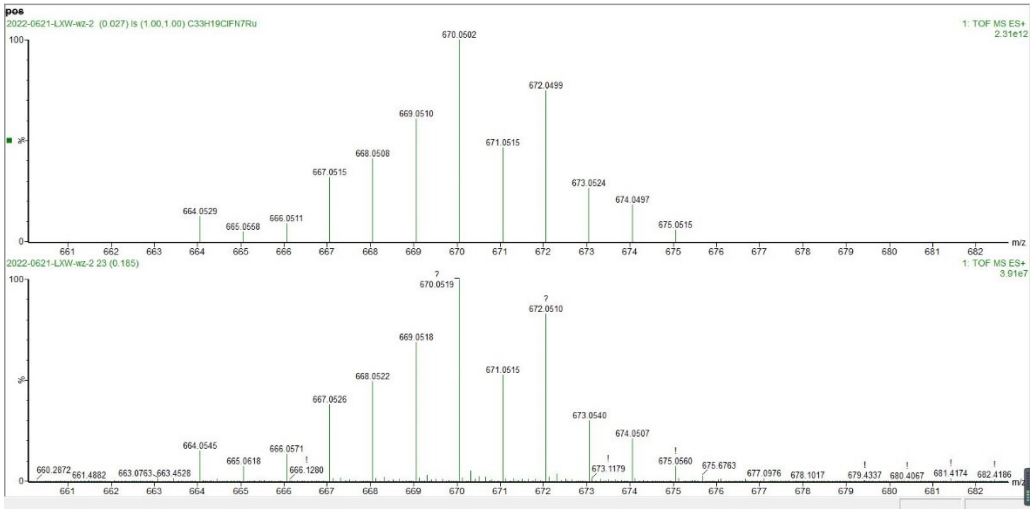

Figure S12 HRESI-MS spectrum of the **Ru4**.

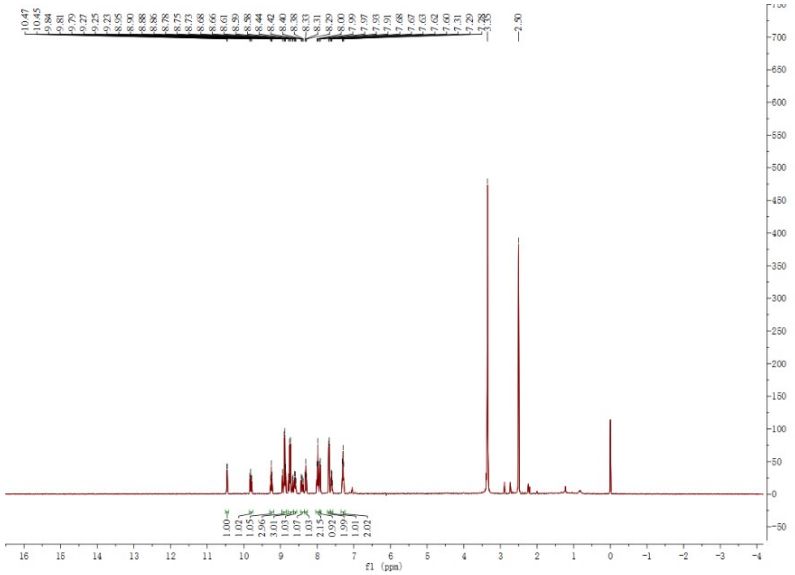

Figure S13 ^{1}H NMR spectrum of the **Ru5**.

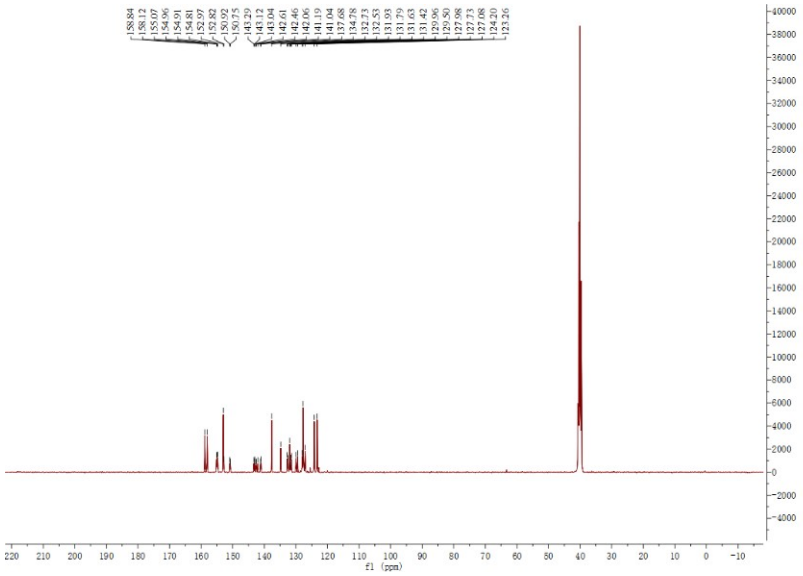

Figure S14 ^{13}C NMR spectrum of the **Ru5**.

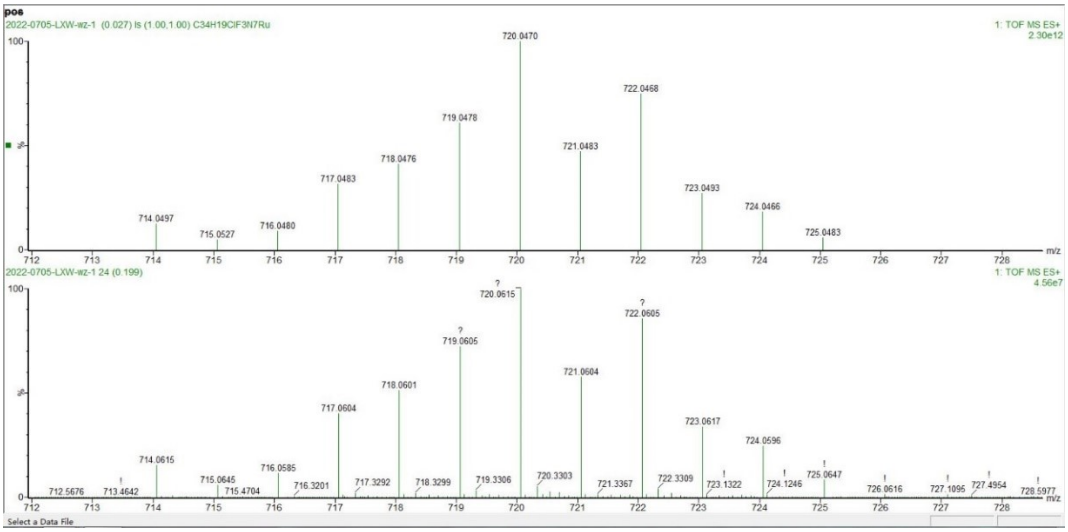

Figure S15 HRESI-MS spectrum of the **Ru5**.

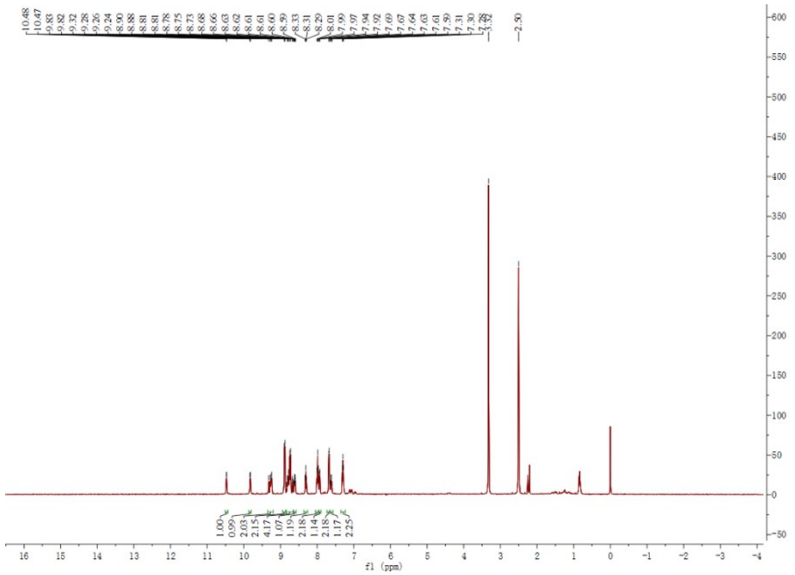

Figure S16 ^{1}H NMR spectrum of the **Ru6**.

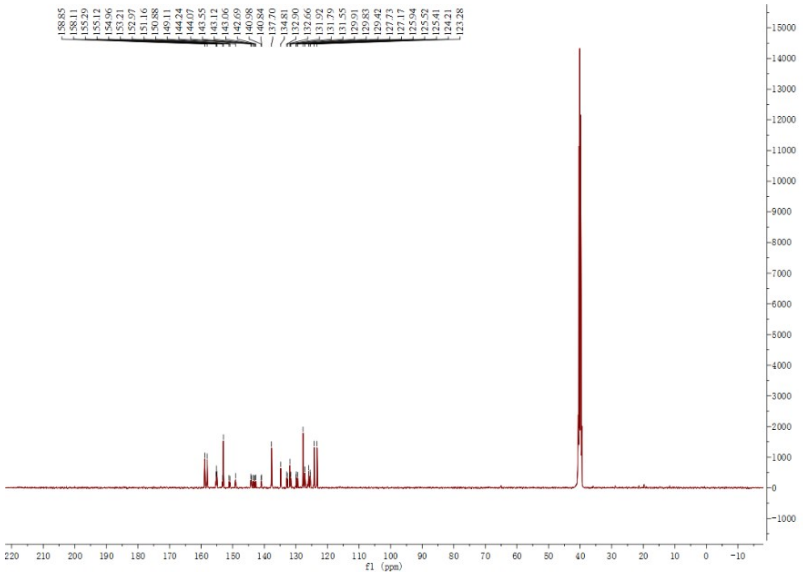

Figure S17 ^{13}C NMR spectrum of the **Ru6**.

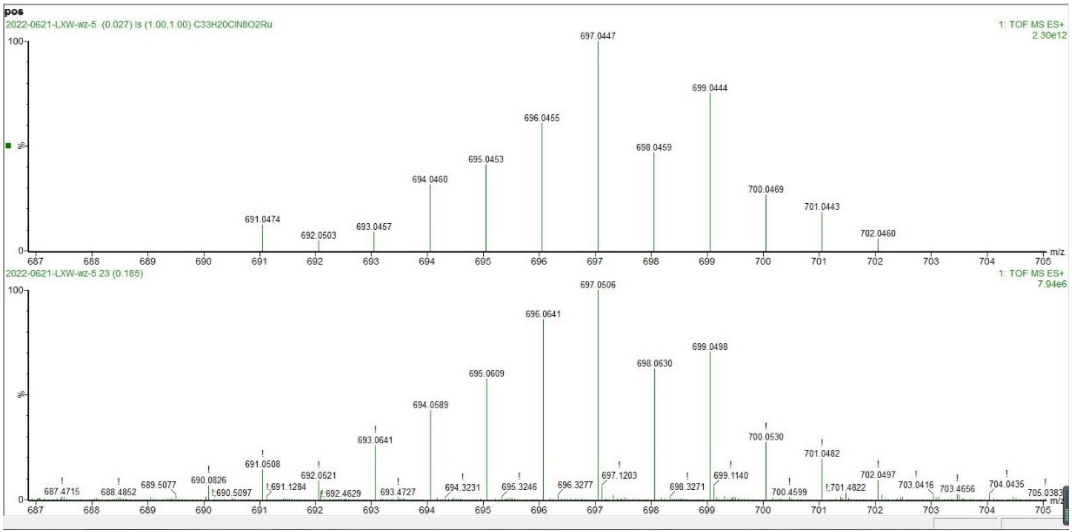

Figure S18 HRESI-MS spectrum of the **Ru6**.

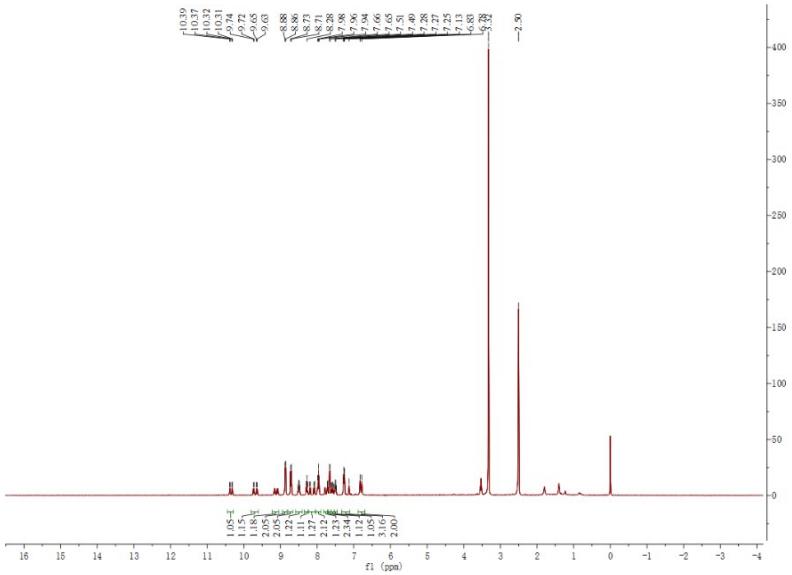

Figure S19 ^{1}H NMR spectrum of the **Ru7**.

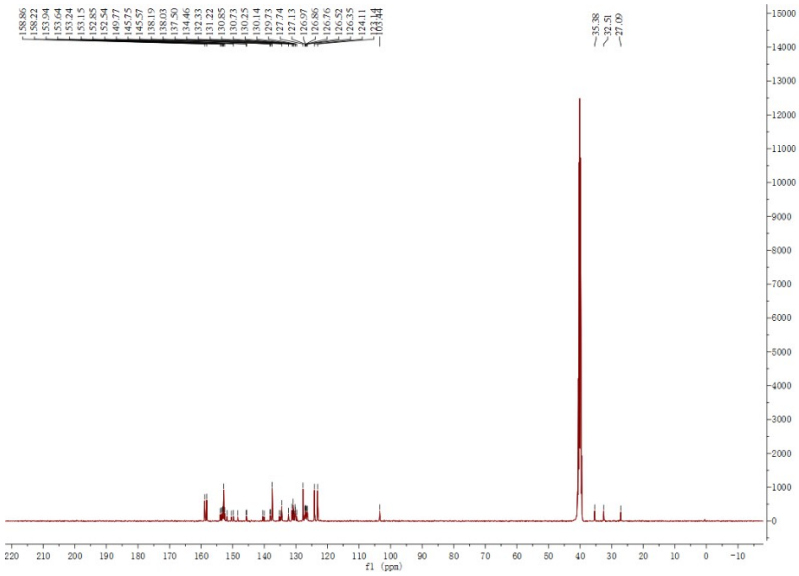

Figure S20 ^{13}C NMR spectrum of the **Ru7**.

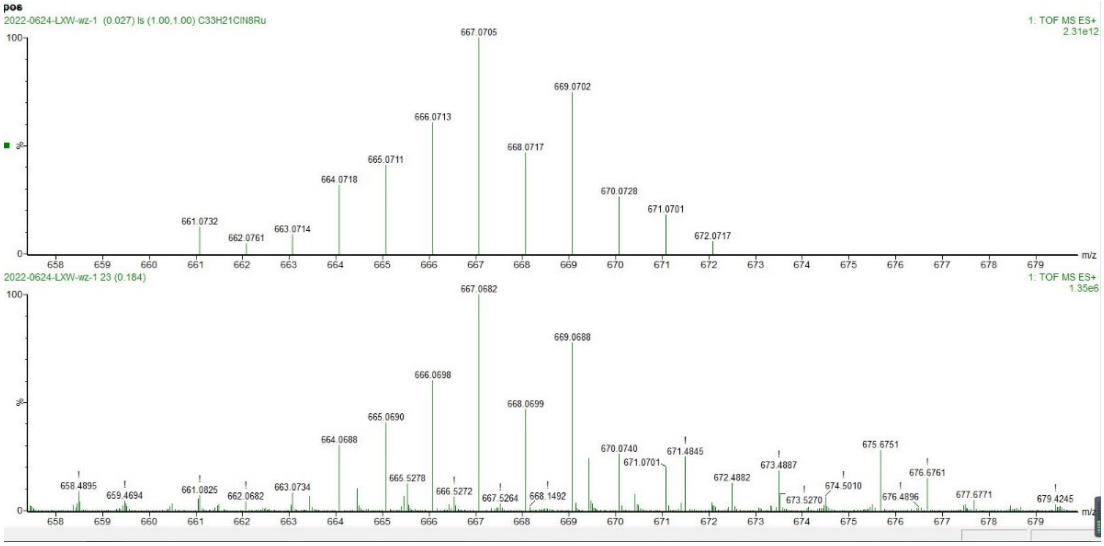

Figure S21 HRESI-MS spectrum of the **Ru7**.

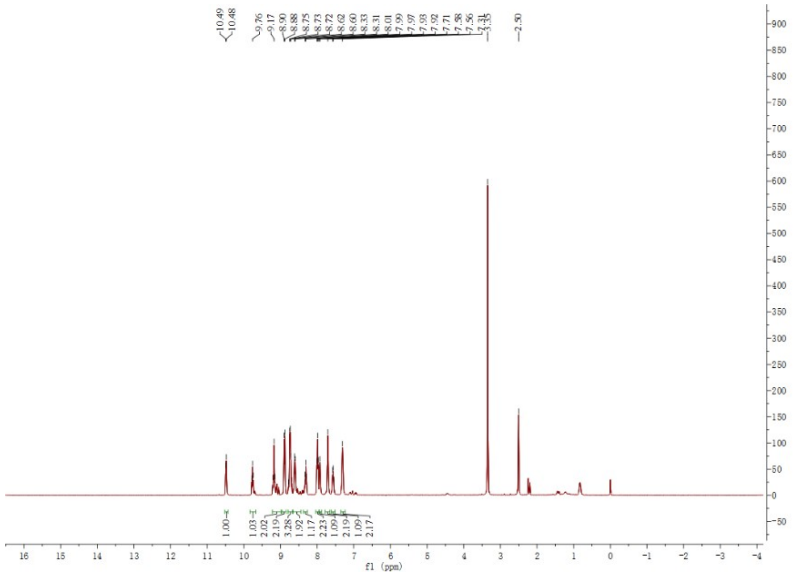

Figure S22 ^{1}H NMR spectrum of the **Ru8**.

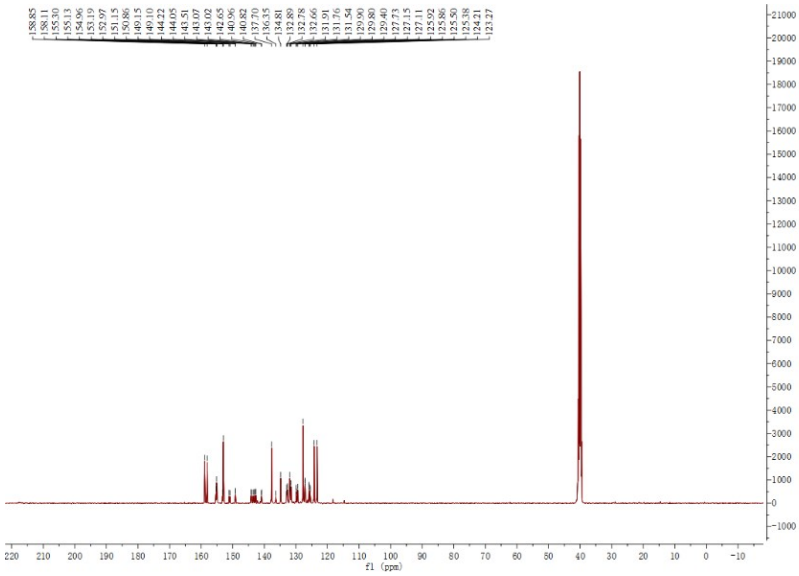

Figure S23 ^{13}C NMR spectrum of the **Ru8**.

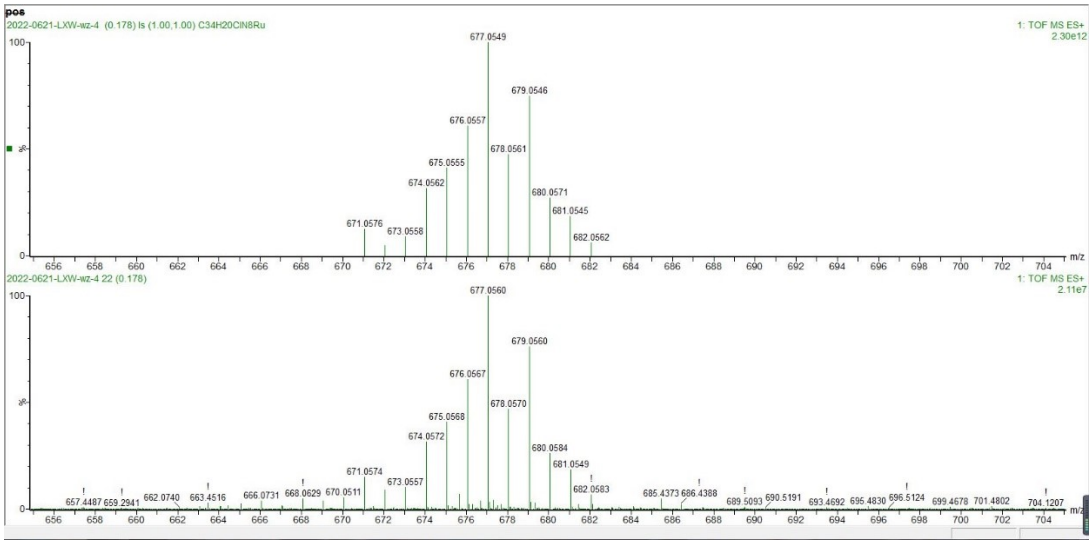

Figure S24 HRESI-MS spectrum of the **Ru8**.

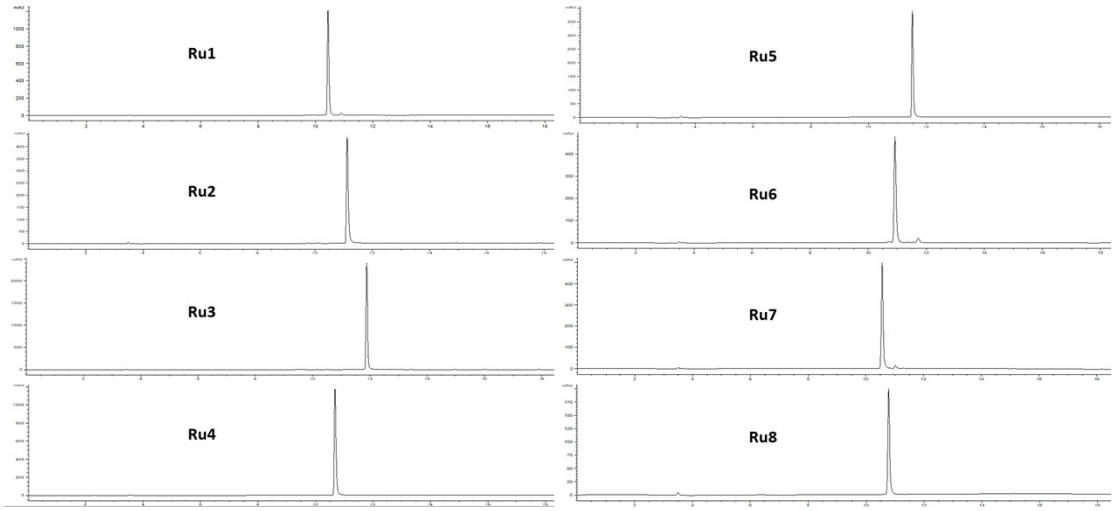

Figure S25 HPLC spectrums of **Ru1-Ru8**.

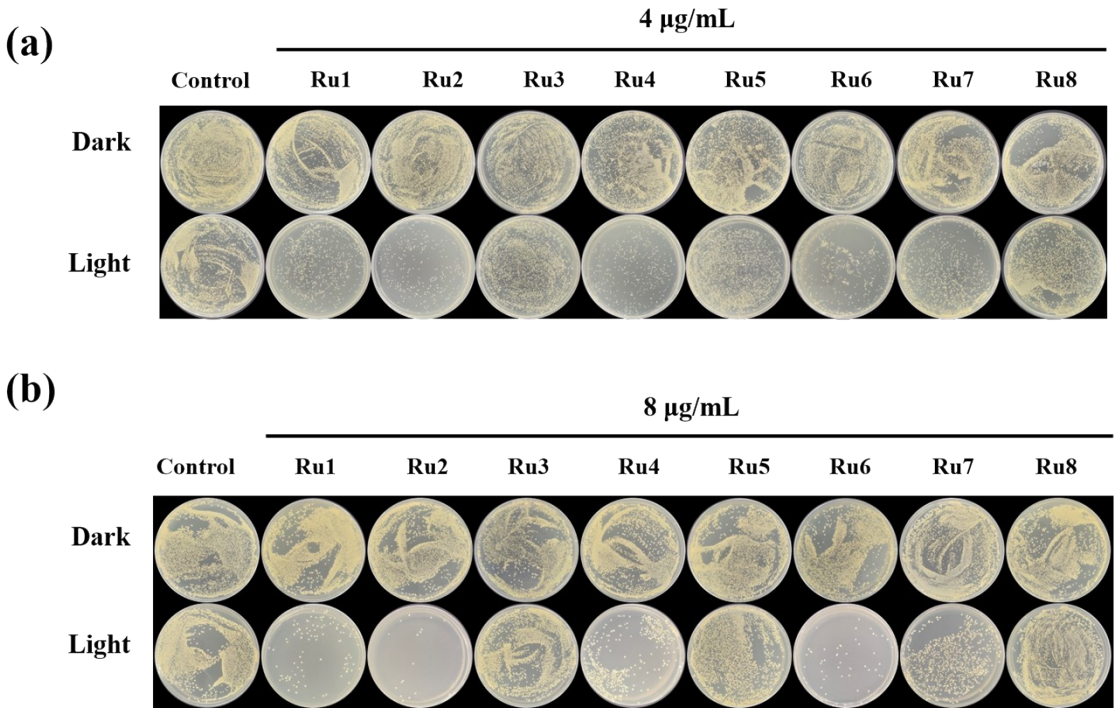

Figure S26 Photographs of agar plate of *S. aureus* treated with **Ru1-Ru8** (a) 4 μg/mL and (b) 8 μg/mL with or without blue LED light irradiation (25 mW/cm^2) for 15 min.

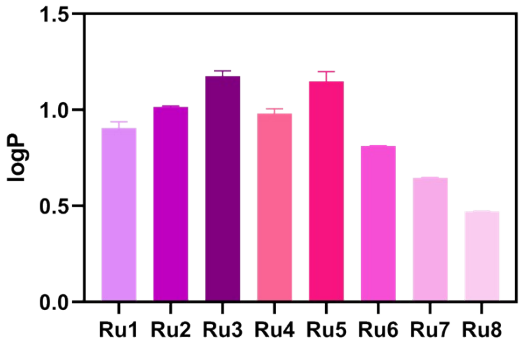

Figure S27 Octanol/water partition coefficients of **Ru1-Ru8.**

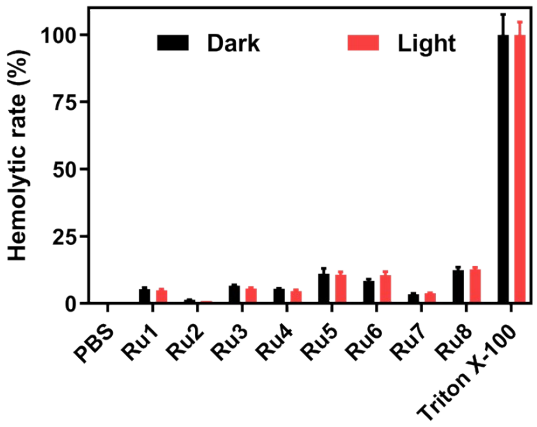

Figure S28 Hemolysis rate of **Ru1-Ru8** at a concentration of 200 μg/mL with or without blue LED light irradiation (25 mW/cm^2) for 15 min, Triton X-100 (1%) and PBS were used as the positive and negative control. Data are presented as mean ± s.d. (n = 3).

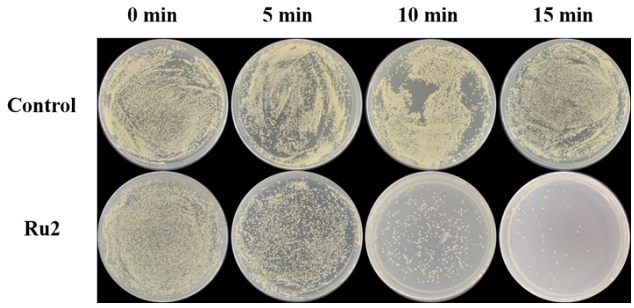

Figure S29 Photographs of agar plate of *S. aureus* treated with or without **Ru2 (**4 μg/mL) under blue LED light irradiation (25 mW/cm^2).

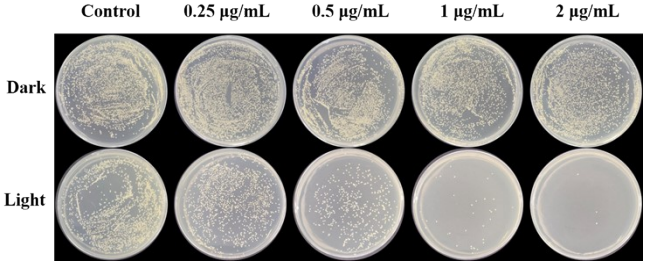

Figure S30 Photographs of agar plate of *S. aureus* treated with **Ru2** (0, 0.25, 0.5, 1 and 2 μg/mL) under dark conditions or with blue LED light irradiation (25 mW/cm^2) for 15 min.

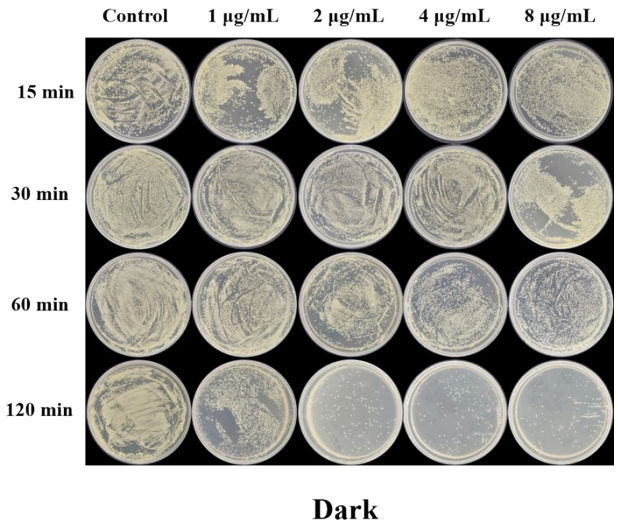

Figure S31 Photographs of agar plate of the killing kinetics of *S. aureus* treated with different concentrations of **Ru2** under dark conditions for 15 min.

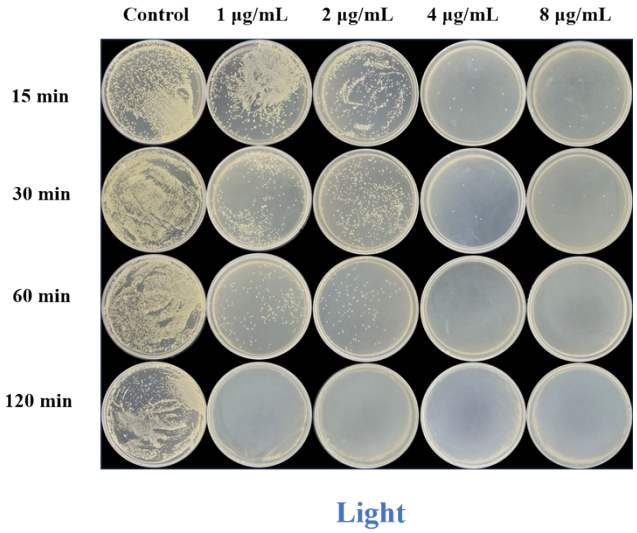

Figure S32 Photographs of agar plate of the killing kinetics of *S. aureus* treated with different concentrations of **Ru2** under blue LED light irradiation (25 mW/cm^2) for 15 min.

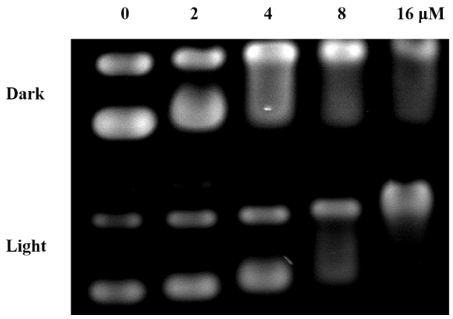

Figure S33 Agarose gel electrophoresis of pUC19 DNA (12.5 μg/mL) untreated and treated with 2, 4, 8 and 16 μM **Ru2** under dark conditions 1h or with blue LED light irradiation (25 mW/cm^2) 5 min.

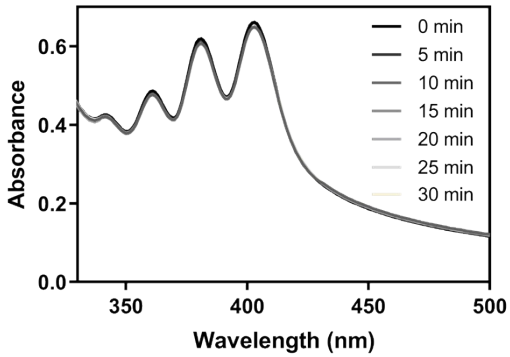

Figure S34 The photo-stability of DPA in H_2O/DMSO (9:1) solution under blue LED light irradiation (25 mW/cm^2).

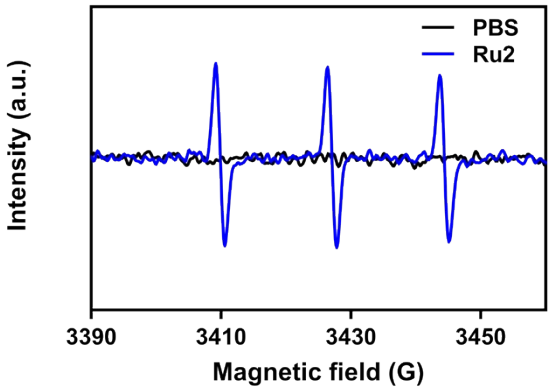

Figure S35 ESR spectra of $^1O_2$ generation by **Ru2** (10 μM) in water under blue LED light irradiation (25 mW/cm^2, 15 min). PBS with blue LED light irradiation was used as a control.

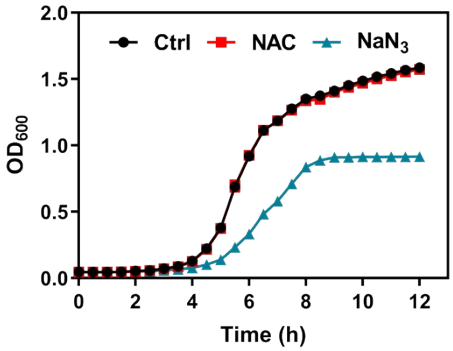

Figure S36 Growth curves of *S. aureus* in the presence and absence of different scavengers (NAC and NaN_3).

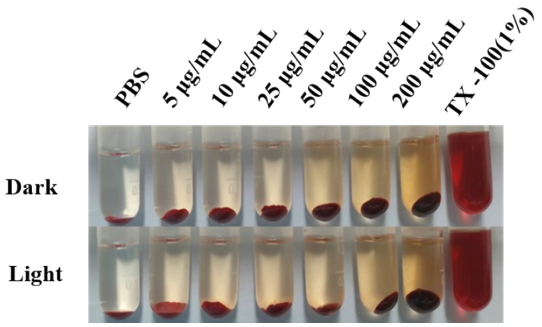

Figure S37 Representative images of rabbit erythrocytes in the presence of Triton X-100 (1%), PBS, **Ru2**.