Supporting Information

Exploration of mono-carbonyl curcuminoids with improved stability as antibacterial agents against *Staphylococcus aureus*

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Table S1. Minimum inhibitory concentration (MIC) of Curcuminoids against methicillin-sensitive *S. aureus* ATCC 29213.

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<th>Name of the curcuminoids</th>
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Figure S1. UV− visible absorption spectra of curcumin and curcuminoids in PBS buffer (pH 7.4) in presence of 10 μM DTT. (i) curcumin, (ii) 34, (iii) 36, (iv) 52, (v) 55, (vi) 58, and (vii) 63.
Figure S3. Membrane depolarization of *S. aureus* by curcuminoids using membrane potential sensitive dye DiSC₃(5). Fluorescence emission spectrum of respiration buffer (5 mM HEPES, 20 mM glucose, pH 7.4), DiSC₃(5) dye in buffer, *S. aureus* cells loaded with DiSC₃(5) dye for 30 min, and melittin (10 µM) added to fluorescence quenched dye-loaded cells. The fluorescence spectrum was acquired at an excitation wavelength of 622 nm and emission was recorded between 650-700 nm on a Shimadzu RF-5301 PC spectrofluorimeter. Slit width of 3 nm was used for both excitation and emission and the temperature was maintained at 37°C for the experiment.

Figure S4. Cell viability corresponding to membrane depolarization assay. The dye-loaded cells were incubated with 5 × MIC of curcuminoids in respiration buffer (5 mM HEPES, 20 mM glucose, pH 7.4) for 2 min and subsequently diluted and plated on BHI agar plates. The plates were incubated overnight and colonies were counted. Each data bar represents mean ± SD from two independent experiments. The decrease in cell viability in compare to untreated control was found to be statistically significant (p<0.05) except for TET.
Figure S5. Cell viability corresponding to membrane permeabilization assay. The calcein-loaded cells were incubated with 5 × MIC of curcuminoids in PBS buffer (10 mM sodium phosphate, 150 mM NaCl, pH 7.4) for 2 h and subsequently diluted and plated on BHI agar plates. The plates were incubated overnight and colonies were counted. Each data bar represents mean ± SD from two independent experiments. The decrease in cell viability in compare to untreated control was found to be statistically significant (p<0.05) except for TET.

Figure S6. Representative histograms of membrane permeabilization assay. The calcein-loaded cells were incubated with 1 × MIC of curcuminoids, TET and 10 μg/mL gramicidin D in PBS buffer (10 mM sodium phosphate, 150 mM NaCl, pH 7.4) for 2 min. (i) Untreated control, (ii) 34, (iii) 36, (iv) 52, (v) 55, (vi) 58, (vii) 63, (viii) TET, and (ix) Gram D (10 μg/mL).
Figure S7. Representative histograms of membrane permeabilization assay. The calcein-loaded cells were incubated with 5 x MIC of curcuminoids, TET, and 10 μg/mL gramicidin D in PBS buffer (10 mM sodium phosphate, 150 mM NaCl, pH 7.4) for 2 min. (i) Untreated control, (ii) 34, (iii) 36, (iv) 52, (v) 55, (vi) 58, (vii) 63, (viii) TET, and (ix) Gram D (10 μg/mL).
Figure S8. Representative histograms of membrane permeabilization assay. The calcein-loaded cells were incubated with $1 \times$ MIC of curcuminoids, TET, and 10 µg/mL gramicidin D in PBS buffer (10 mM sodium phosphate, 150 mM NaCl, pH 7.4) for 2 h. (i) Untreated control, (ii) 34, (iii) 36, (iv) 52, (v) 55, (vi) 58, (vii) 63, (viii) TET, and (ix) Gram D (10 µg/mL).
Figure S9. **Representative histograms of membrane permeabilization assay.** The calcein-loaded cells were incubated with $5 \times$ MIC of curcuminoids, TET, and 10 μg/mL gramicidin D in PBS buffer (10 mM sodium phosphate, 150 mM NaCl, pH 7.4) for 2 h. (i) Untreated control, (ii) 34, (iii) 36, (iv) 52, (v) 55, (vi) 58, (vii) 63, (viii) TET, and (ix) Gram D (10 μg/mL).