

Supplementary Information

Gold Nanoclusters Based Nanocomposites for Combinatorial Antibacterial Therapy on Biofilm Forming Pathogens

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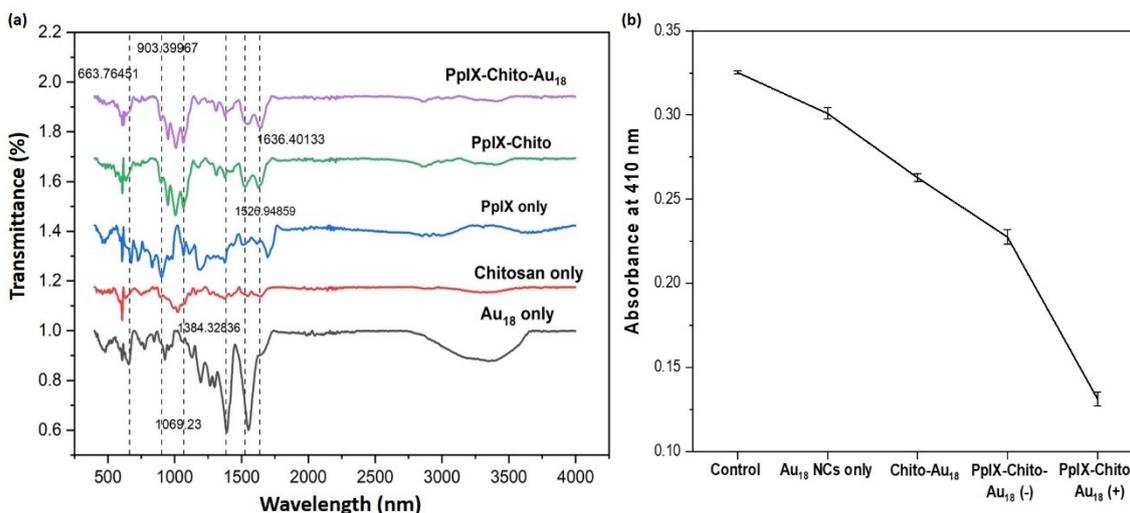


Figure S1. (a) FT-IR spectra of Au₁₈ NCs alone (black spectra), chitosan only (red spectra), PpIX only (blue spectra), PpIX-Chito (green spectra), and PpIX-Chito-Au₁₈ (violet spectra). (b) Determination of singlet oxygen produced extracellularly by samples (Au₁₈ NCs, Chito-Au₁₈, and PpIX-Chito-Au₁₈) under dark (-) and light (+) conditions. The reduction in absorption of DPBF at 410 nm is directly proportional to the amount of ROS produced.

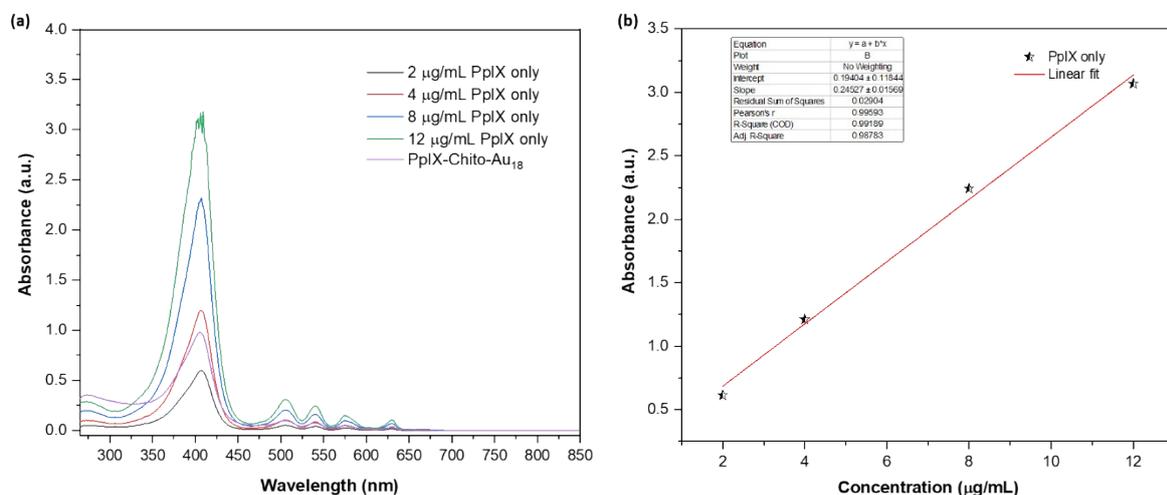


Figure S2. Determination of loading content of PpIX in PpIX-Chito-Au₁₈ nanocomposite. (a) UV-vis absorption spectra and (b) calibration curve of PpIX in DMSO of different concentrations.

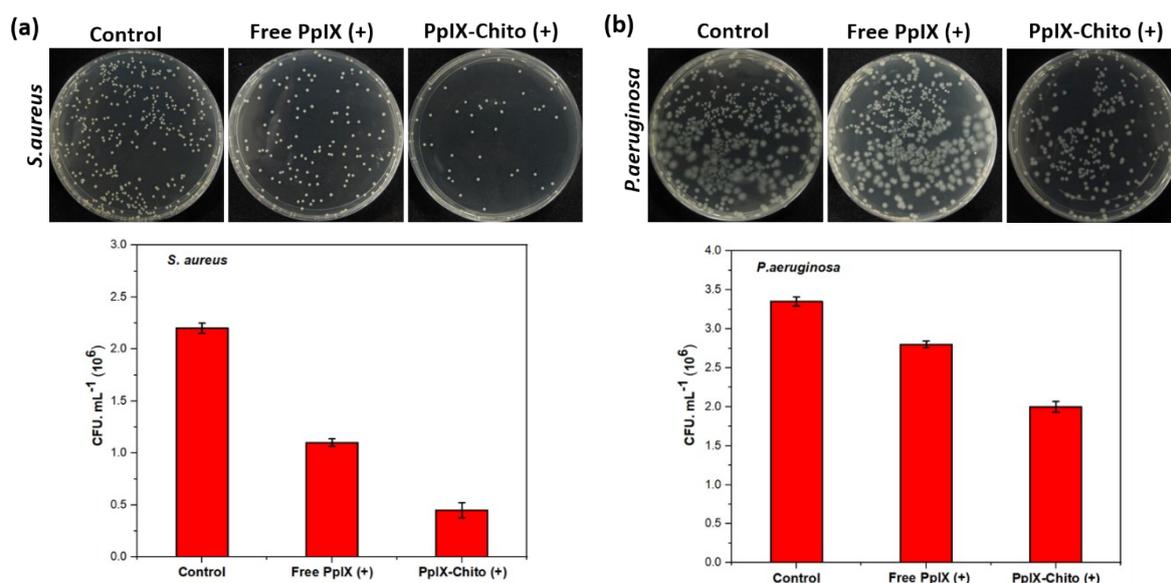


Figure S3. (a) Representative photographs of bacterial colonies (*S. aureus*) obtained after treatment with free PpIX(+) and PpIX-Chito(+) nanocomposite under light (+) conditions. Quantitative evaluation of antibacterial capabilities of the treatment groups on *S. aureus* by counting the colonies grown on LB agar plates are shown below **Figure S3a**. Data are means \pm S.D., n = 3. (b) Representative photographs of bacterial colonies (*P. aeruginosa*) obtained after treatment with free PpIX(+) and PpIX-Chito(+) nanocomposite under light (+) conditions. Quantitative evaluation of antibacterial capabilities of the treatment groups on *P. aeruginosa* by counting the colonies grown on LB agar plates are shown below **Figure S3b**. Data are means \pm S.D., n = 3.

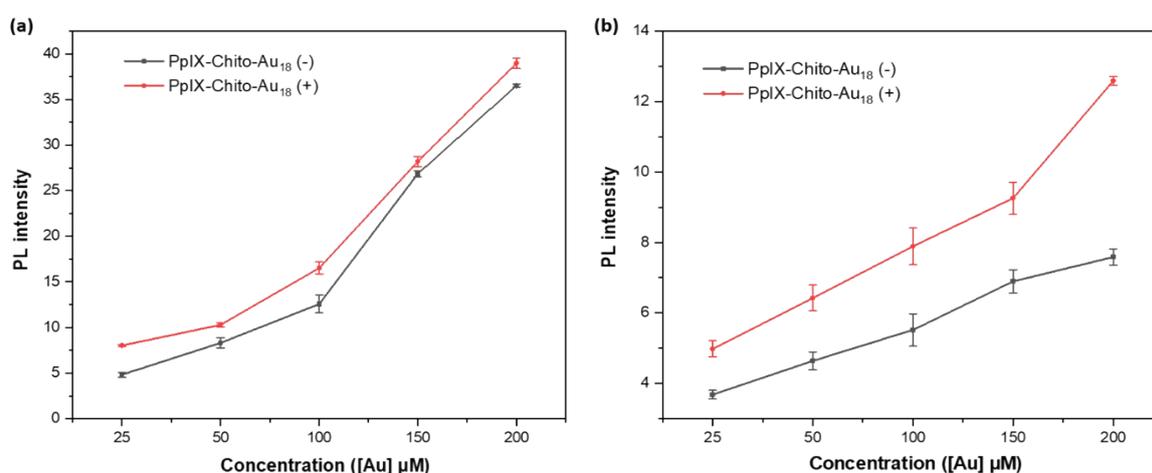


Figure S4. NPN uptake on (a) *S. aureus* and (b) *P. aeruginosa* after incubation with various concentrations of PpIX-Chito-Au₁₈ nanocomposite under dark (-) and light (+) conditions.

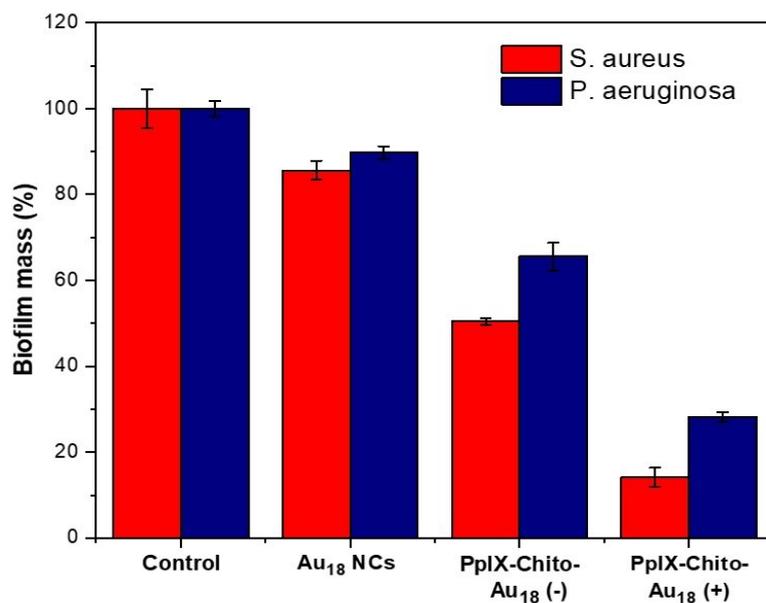


Figure S5. Quantitative evaluation of biofilm mass percentage after treating the biofilms of both *S. aureus* and *P. aeruginosa* with Au₁₈ NCs only and PpIX-Chito-Au₁₈ nanocomposite under dark (-) and light (+) conditions using standard crystal violet assay.

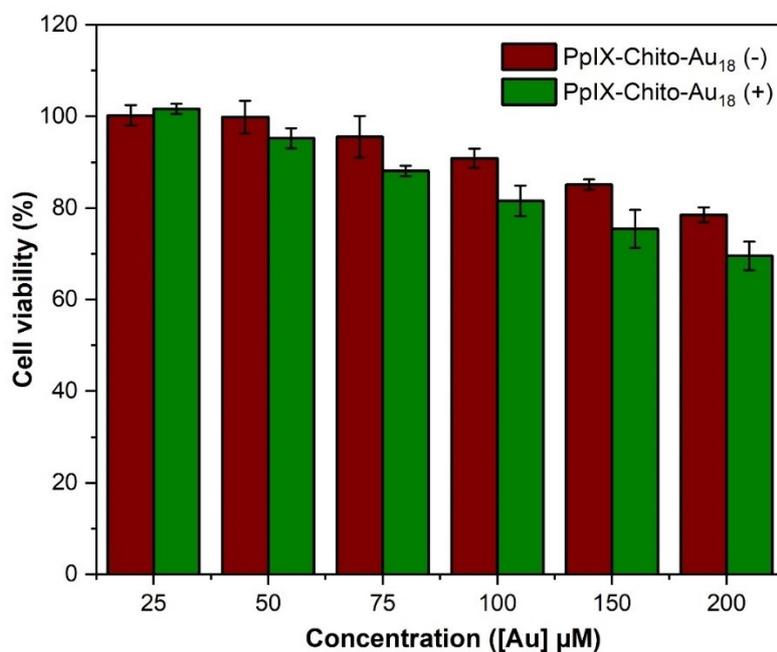


Figure S6. Analysing the safety profile of PpIX-Chito-Au₁₈ under dark (-) and light (+) conditions on mouse embryonic fibroblast cell line NIH 3T3.