

Xylan-Porphyrin Hydrogels as Light-Triggered Gram-Positive Antibacterial Agents

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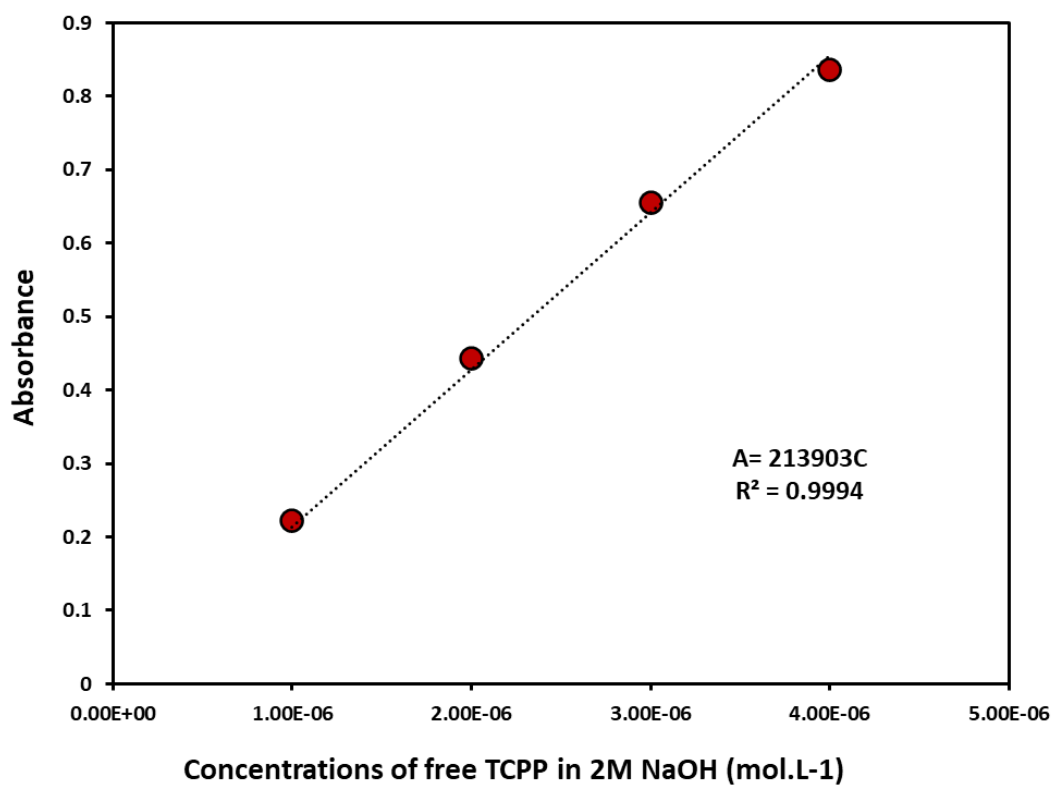


Figure S1. UV-Vis standard calibration curve obtained from different concentrations of free TCPP in 2 M sodium hydroxide ($\lambda_{\max} = 410$ nm)



Figure S2: Photography of xylan-hydrogel free without TCPP and used as control (CT) and obtained in our previous work [21]

Table S1. Singlet oxygen quantum yield of TCPP and Xyl-TCPP-3 in DMF

Compounds	Wavelength λ_{abs} (nm)	Singlet Oxygen quantum yield $\Phi_{\Delta}^1O_2^a$
TCPP	414	0.81 ± 0.01
Xyl-TCPP	414	0.29 ± 0.01

^a Mean of two independent experiments using tetraphenylporphyrin as standard ($\Phi_{\Delta} = 0.64$ in DMF) and 9,10-dimethylanthracene as described in supporting information [23, 27]

Determination of singlet oxygen production. Singlet oxygen generating efficiencies of porphyrins were determined by photooxidation of 9,10-dimethylanthracene (DMA) based on steady-state photolysis. H₂TPP in DMF was used as reference ($\Phi_{\Delta}^{Std} = 0.64$). A mixture of 1.5 mL of a stock solution of DMA in DMF (10^{-4} M) and 1.5 mL of the tested photosensitizer in DMF (10^{-6} M) was transferred into a 1 cm quartz cuvette. The solution was then saturated with air and magnetically stirred. A 150 W halogen lamp was used to irradiate the sample at a distance of 30 cm (fluence rate 0.3 mW/cm^2). A spectral window of 400-700 nm of the incident light was selected by eliminating UV and IR irradiation using an optical filter. Decrease of DMA concentration in DMF as a function of irradiation time was monitored at 401 nm. Absence of significant spectral change ruled out any photobleaching within the experimental period. Singlet oxygen quantum yield (Φ_{Δ}) was calculated by using the equation below:

$$\Phi_{\Delta} = \Phi_{\Delta}^{Std} \frac{R \cdot I_{abs}^{Std}}{R^{Std} \cdot I_{abs}}$$

Where R and R^{Std} are the respective speeds of DMA disappearance in experimental sample and standard; I_{abs} and I_{abs}^{Std} are the light intensities absorbed between 400 and 700 nm by experimental sample and standard, respectively.