

## Supplementary Information

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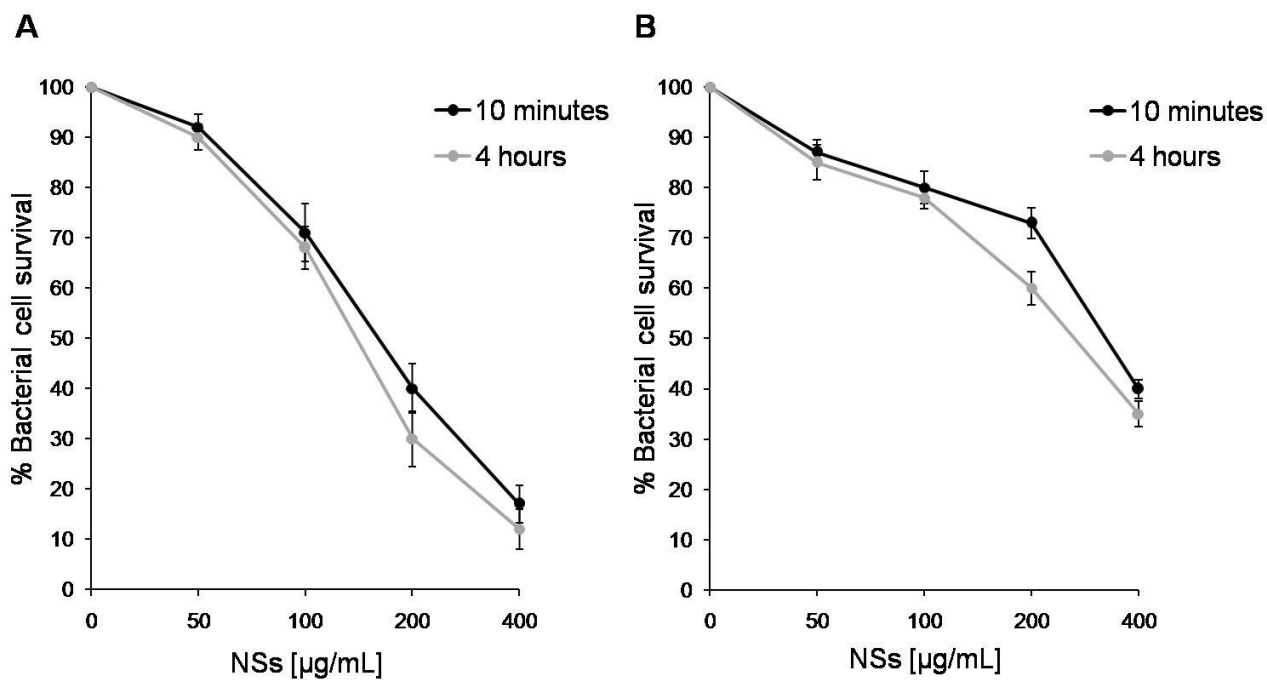
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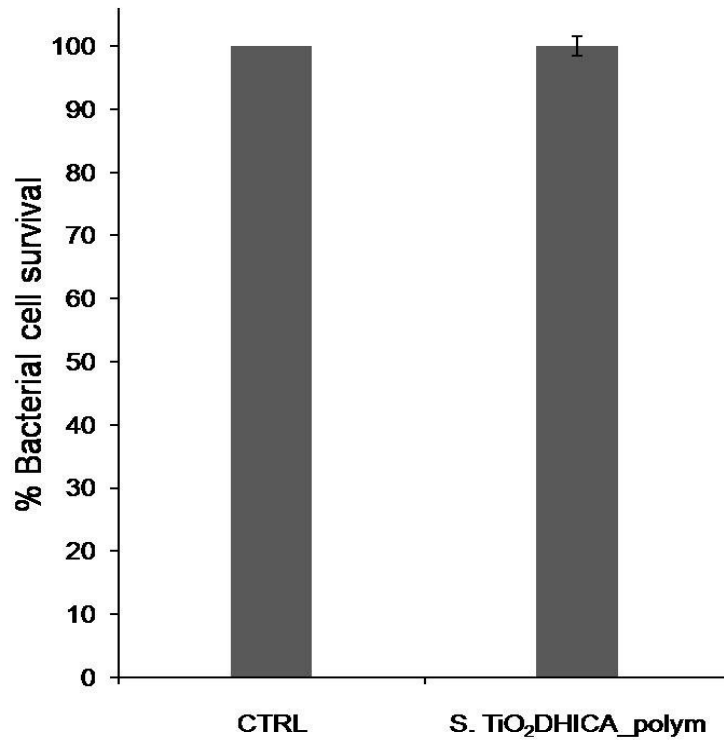
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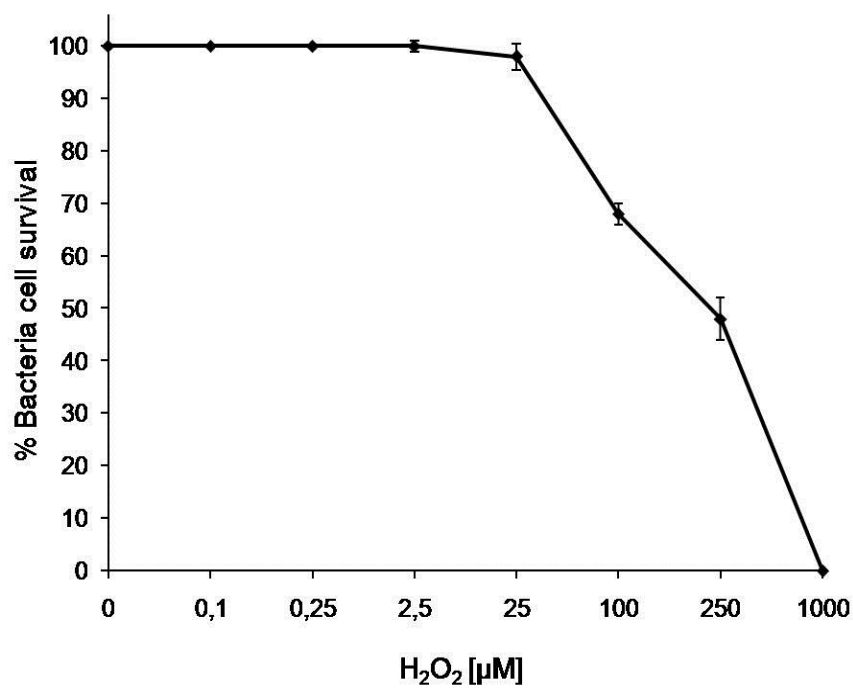
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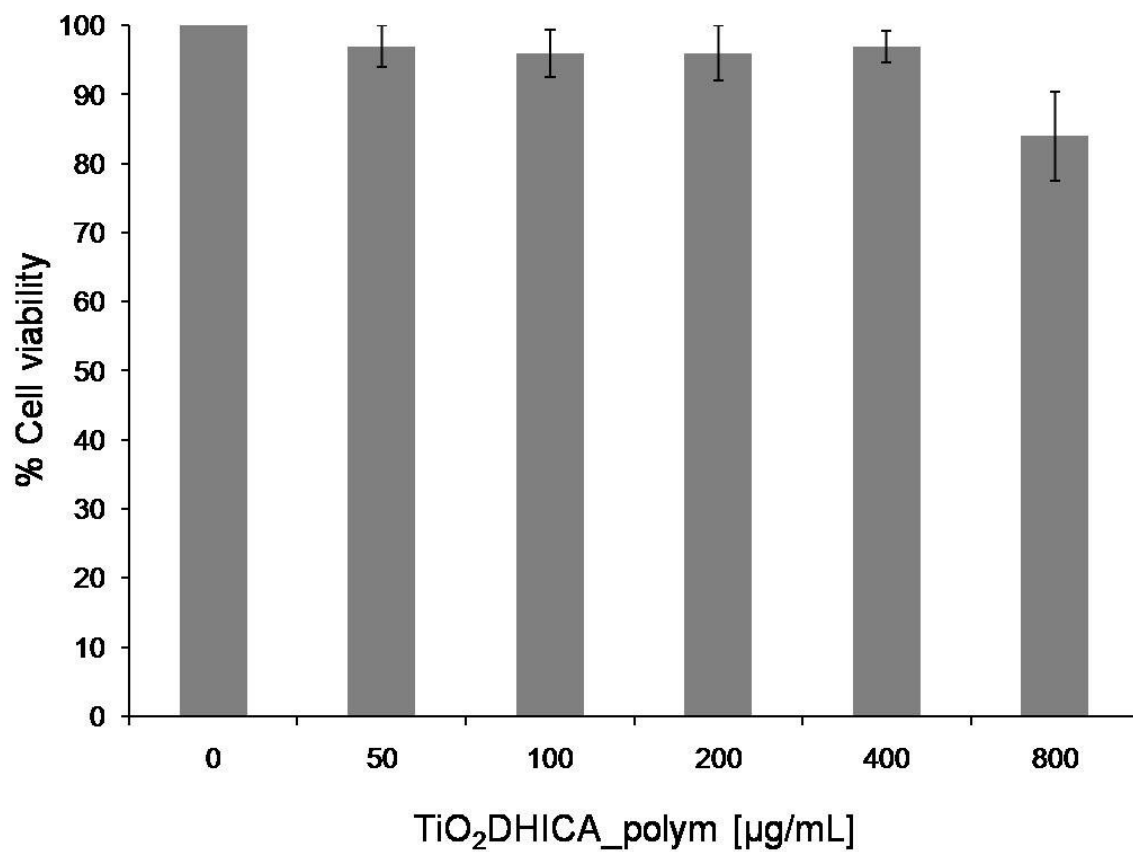
**Fig. S1** Antimicrobial activity of DHICA-eumelanin (**panel A**), and TiO<sub>2</sub>DHICA<sub>ti</sub> (**panel B**) at different concentrations (50-400  $\mu\text{g/mL}$ ) valuated by colony count assay, after 4 hours (gray circles) and 10 minutes (black circles) of incubation, against *Escherichia coli* DH5 $\alpha$  strain. The % of bacterial survival is represented on the y axis. The assays were performed in three independent experiments.



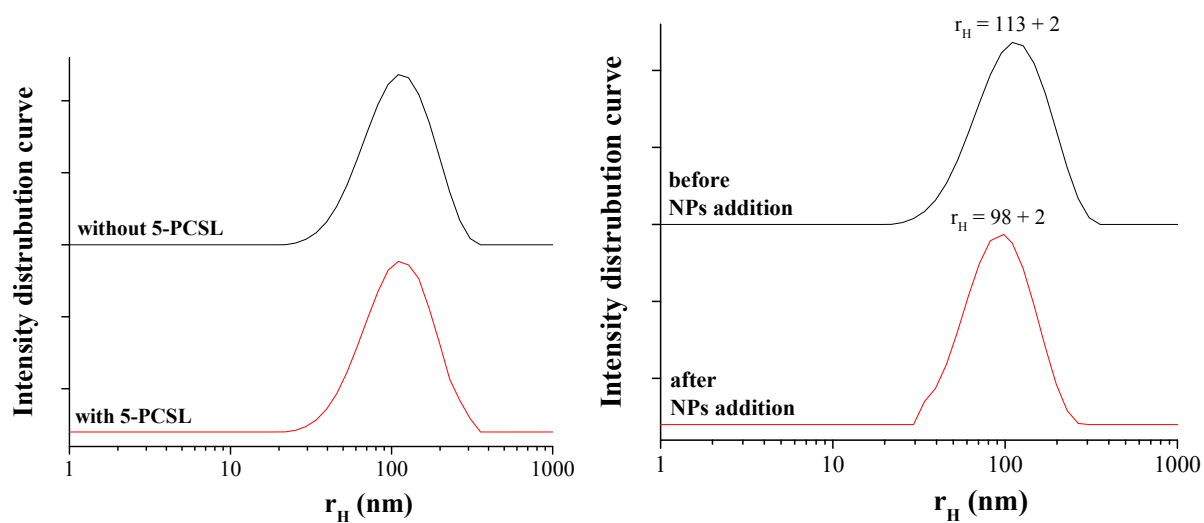
**Fig. S2** Antimicrobial activity of TiO<sub>2</sub>DHICA\_polym supernatant valuated by colony count assay, after 4 hours of incubation, against *Escherichia coli* DH5 $\alpha$  strain. The % of bacterial survival is represented on the y axis. The assays were performed in three independent experiments. P value < 0.05.



**Fig. S3** Antimicrobial activity of H<sub>2</sub>O<sub>2</sub> (hydrogen peroxide) at different concentrations (0.1-1000μM) valuated by colony count assay, against *Escherichia coli* DH5a strain. The % of bacterial survival is represented on the y axis. The assays were performed in three independent experiments.



**Fig. S4** Cytotoxic effects of TiO<sub>2</sub>DHICA\_polym (0-800 μg/mL) on human eukaryotic cells (keratinocytes) by MTT assay. The assays were performed in three independent experiments. P value < 0.05.



**Fig. S5** Size distribution curves by intensity of freshly prepared DOPE/DOPG/LPS liposomes incorporating and not-incorporating 5-PCSL spin-label (panel A); before and after addition of  $\text{TiO}_2\text{DHICA\_polym}$  nanostructures (panel B).