Bioinspired and Eco-Friendly High Efficacy Cinnamaldehyde Antibacterial Surfaces

(Supplementary Information)

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1. FIGURES

Figure S 1: Uncoated PET samples were used to create a 1:10 dilution series in Luria-Bertani broth from $10^{-2}$ to $10^{-7}$. 10 µl of each dilution containing *E. coli* was applied onto a Luria-Bertani agar plate which was incubated overnight at 30°C. Cell counts at $10^{-6}$: V1 = 32 ($= 3.2 \times 10^9$ ml$^{-1}$), V2 = 37 ($= 3.7 \times 10^9$ ml$^{-1}$), S1 = 40 ($= 4.0 \times 10^9$ ml$^{-1}$), and S2 = 35 ($= 3.5 \times 10^9$ ml$^{-1}$). Similar bacterial numbers were recovered from uncoated PET samples regardless of whether vortexing (V) or sonication (S) was used.
Figure S 2: Scanning electron microscopy (SEM) images of uncoated and polydopamine–cinnamaldehyde coated PET film surfaces: as prepared, after exposure of the *E. coli* culture and vortexing or sonication to remove any surface bound bacterial cells.
Figure S 3: Atmospheric pressure solids analysis probe ionisation (ASAP) mass spectrum of phenethylamine and cinnamaldehyde reaction product.
Figure S 4: After exposure of the *E. coli* solution to uncoated PET film or polydopamine–cinnamaldehyde coated PET film, 900 μL of sterile Luria-Bertani broth was added into each microtube containing the sample followed by either vortexing or sonication, the polydopamine-cinnamaldehyde coated PET film was removed, and 100 μL of each bacteria solution spread onto a Luria-Bertani agar plate, and incubated overnight at 30°C.
Figure S 5: After exposure of polydopamine–cinnamaldehyde coated PET film to *E. coli*, and then addition of 900 μL of sterile Luria-Bertani broth into the microtube containing sample followed by either vortexing or sonication, the polydopamine–cinnamaldehyde coated PET film was removed, and 900 μl of *E. coli* bacteria solution was centrifuged at 13,000 rpm for 2 min. The supernatant was discarded, and 100 μl of PBS was added and vortexed to recover any cells present. This 100 μl resuspension was then spread onto an Luria-Bertani agar plate, and incubated overnight at 30°C. No colonies were observed following incubation.