SUPPORTING INFORMATION

An 'on-demand' photothermal antibiotic release cryogel patch: Evaluation of efficacy on an *ex vivo* model for skin wound infection

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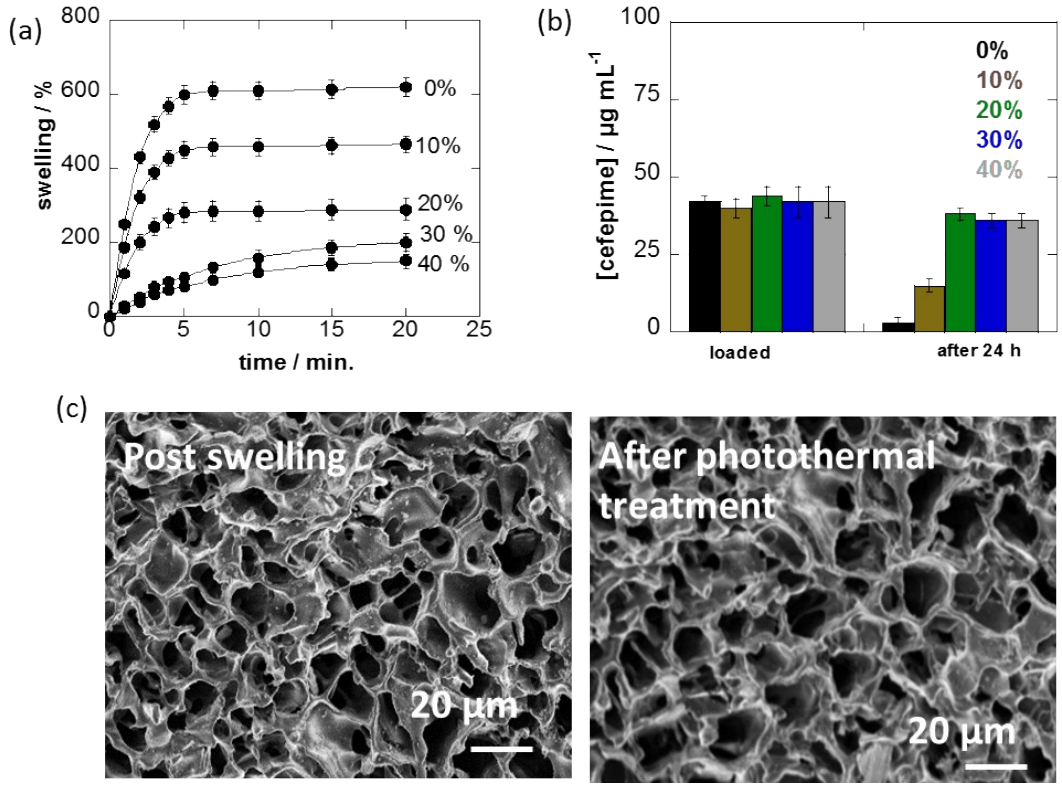

Figure S1: (a) Equilibrium swelling of different rGO loaded cryogels formed using different molar percentage between PEGMEMA/BuMA with BuMA ranging from 0, 10, 20, 30 and 40

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molar %. (b) Passive release of cefepime into water from different rGO-CG gels loaded with cefepime, and (c) SEM images showing the cryogel morphology before and after heating.

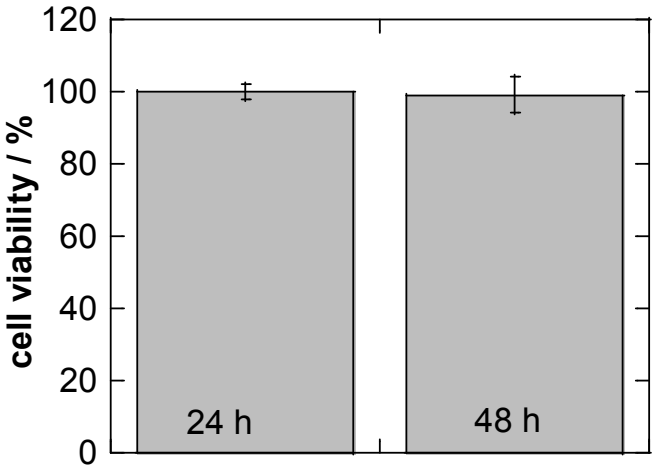

Figure S2. HeLa cell viability of after 24 and 48h incubation with rGO-CG.

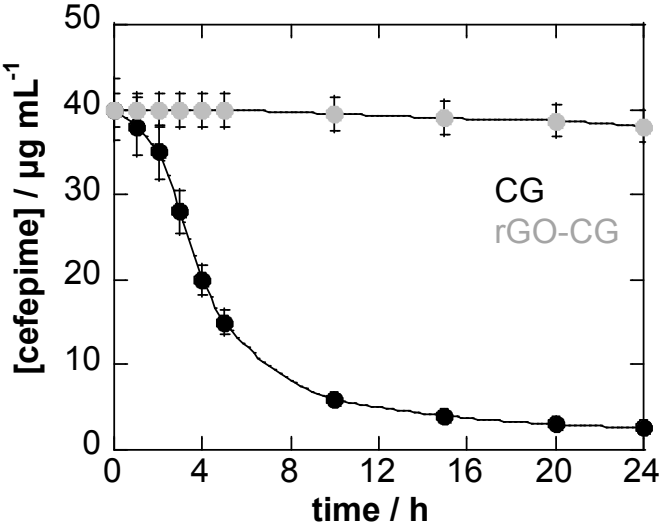

Figure S3. Passive release profile of cefepime loaded CG and rGO-CG gels into water over a period of 24h.

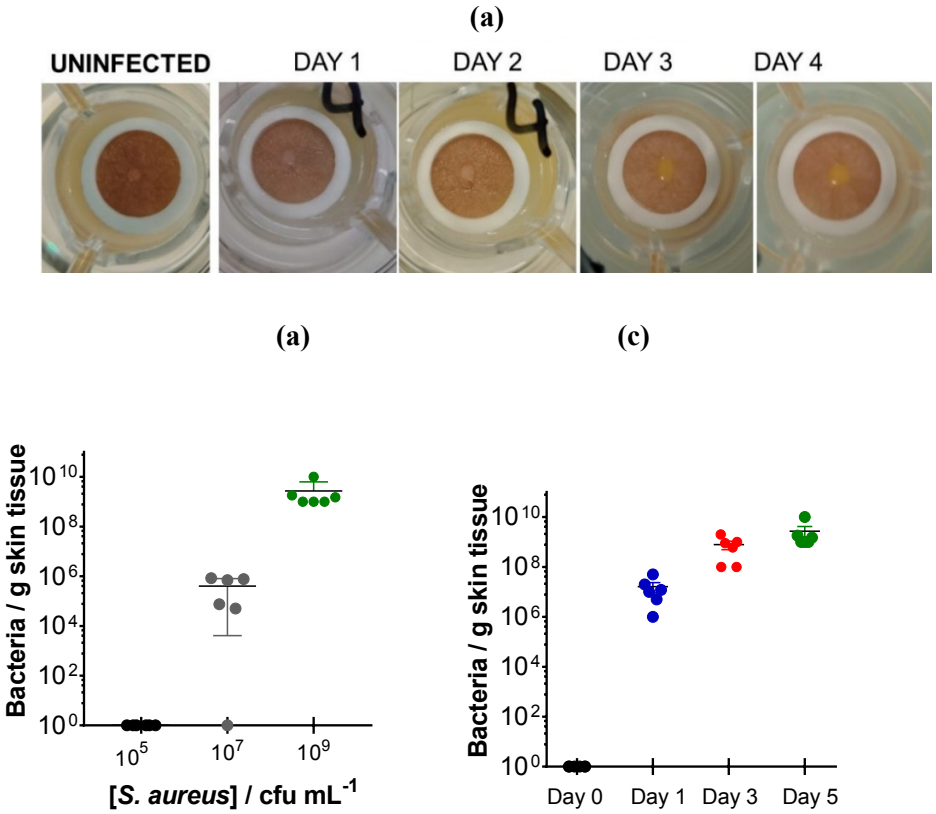

Figure S4: (a) Optical representative images of uninfected wound skin and wound skin infected with *S. aureus* (1×10^9 CFU mL^{-1}) for one to four days. (b) Effect of the different *S. aureus* concentrations on bacterial counts per gram skin tissue after 5 days. (c) Bacterial counts per gram skin tissue as determined from wound skin treated with *S. aureus* (1×10^9 CFU mL^{-1}) at different time intervals, homogenized and plated on isolated agar plates to determine CFU counts. All the values are displayed as means ± SEM.

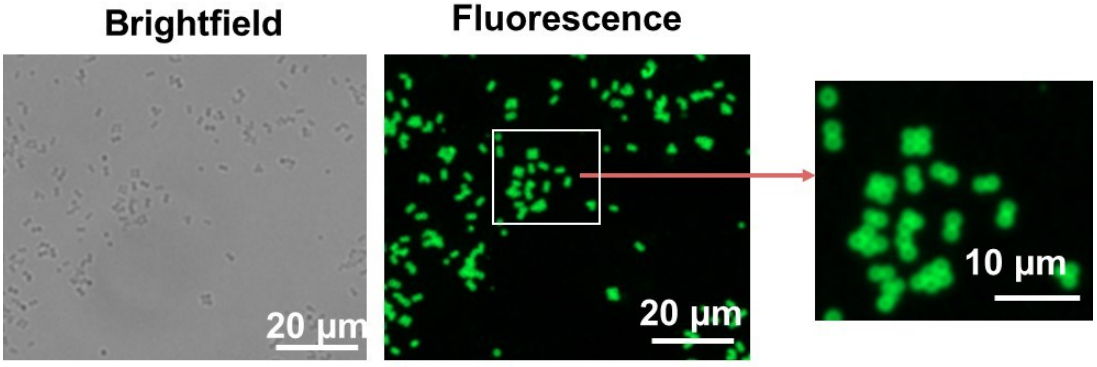

Figure S5: Fluorescence images of a suspension of *S. aureus* (1×10^7 CFU mL^{-1}) after treatment with anti-*S. aureus* antibody.

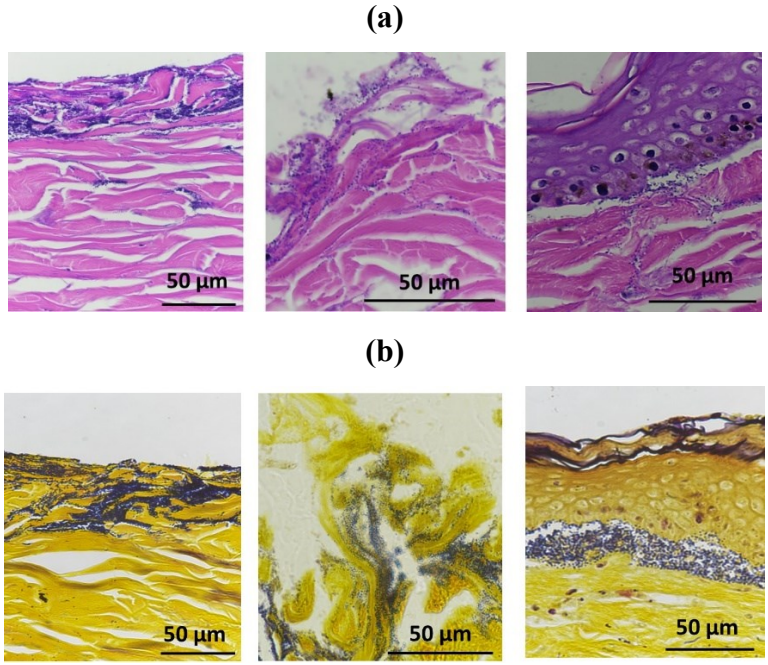

Figure S6: Histological analysis of infected regions in the *ex vivo* skin model. (a) H&E staining of *S. aureus* (1× 10^7 CFU mL^{-1}) infected skin after 5 days. Left and middle: bacteria colonization of the wound (blue dots); right: higher magnification of the infected wound showing penetration of the bacteria in the dermis. (b) Gram staining of infected skin. Left and middle: bacteria colonization of the wound (grey dots); right: higher magnification of the infected wound confirming penetration of the bacteria in the dermis.

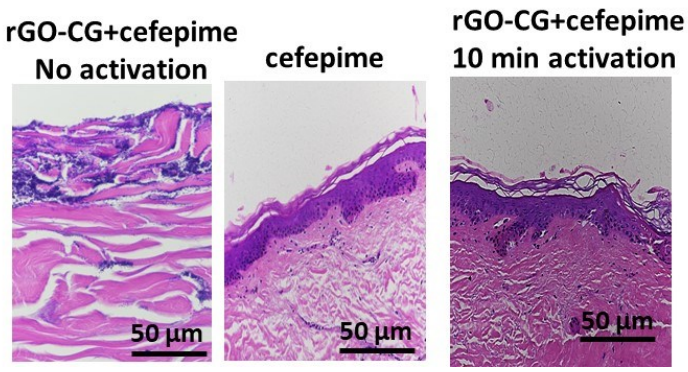

Figure S7: H&E staining of S. aureus (1× 10^7 CFU mL^{-1}) infected skin after 3 days treatment with cefepime loaded rGO-CG with an with light activation (left and right image) as well as with cefepime (middle).