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Visible-light-activated chlorophyllin–calcium phosphate nanohybrid for reusable photodynamic decontamination of fresh-cut produce

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SUPPLEMENTARY MATERIAL

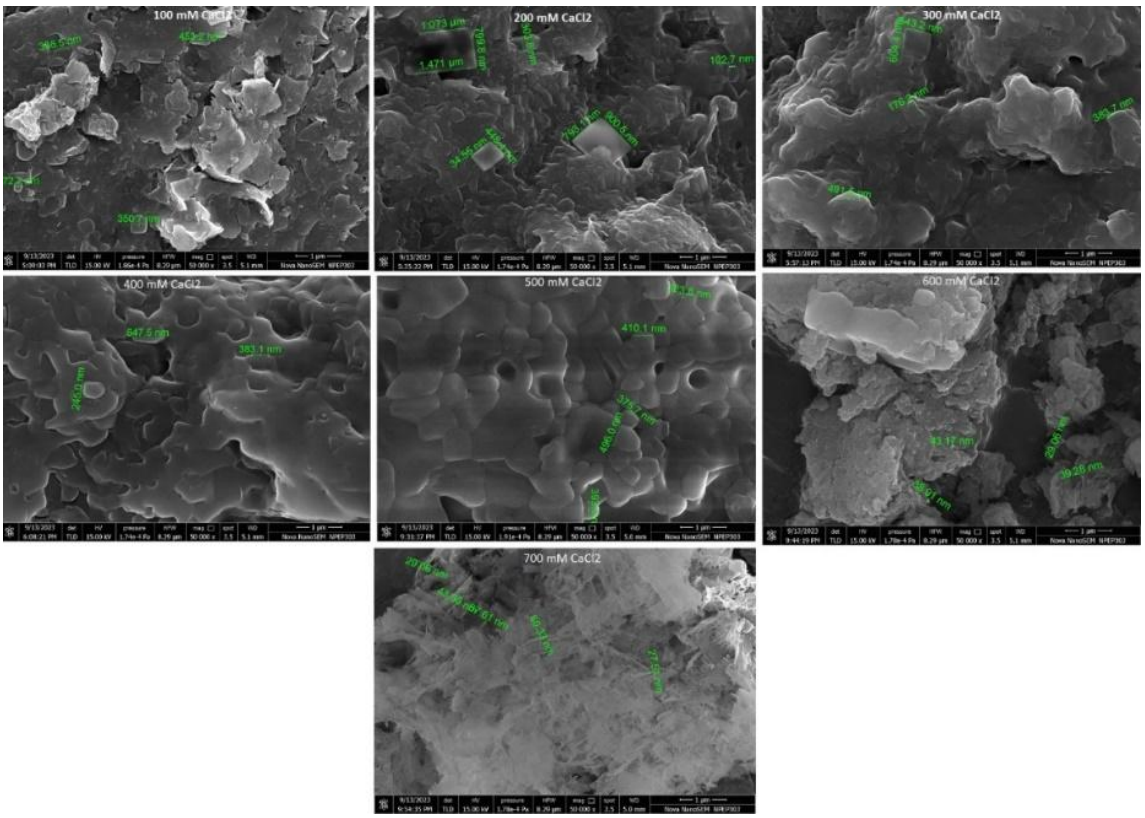


Fig. 1. SEM showing various morphological changes occurring during Chlorophyllin-$Ca_3(PO_4)_2$ nanohybrid synthesis by varying $CaCl_2$ concentrations.

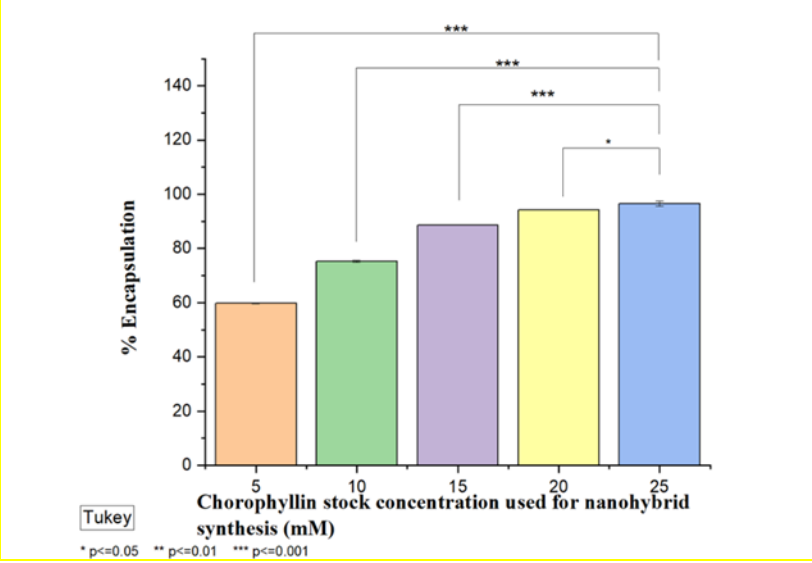


Fig. 2. Effect of chlorophyllin stock solution concentration (5-15 mM) used during nanohybrid synthesis on chlorophyllin encapsulation efficiency.

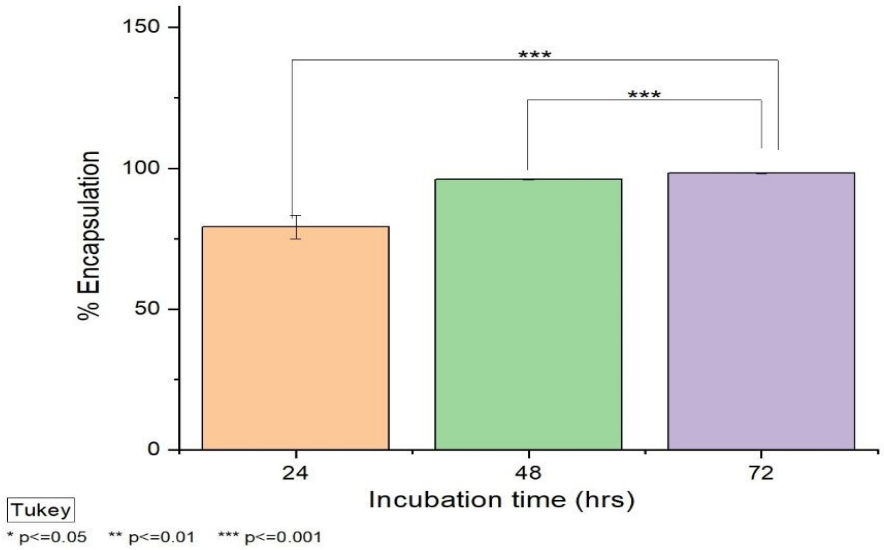


Fig. 3. Effect of incubation time on chlorophyllin encapsulation.

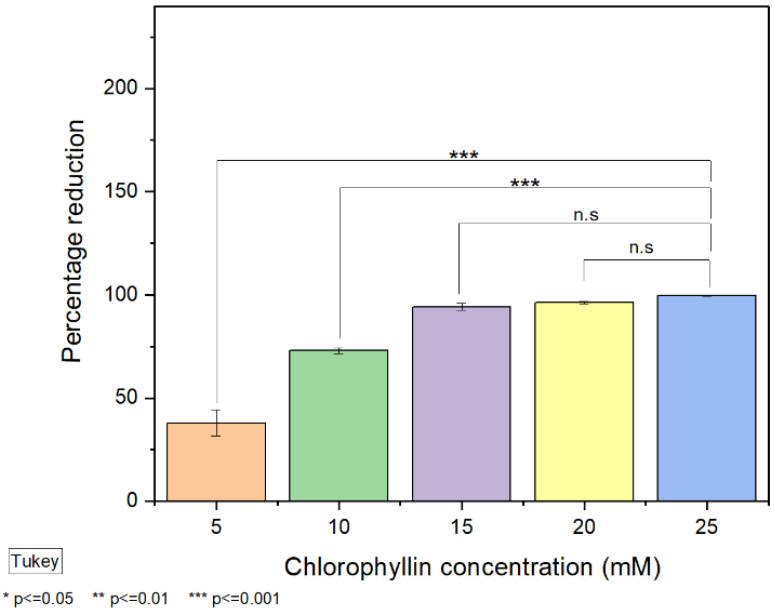


Fig. 4. Effect of chlorophyllin concentration on the photokilling of *S. Typhimurium*.

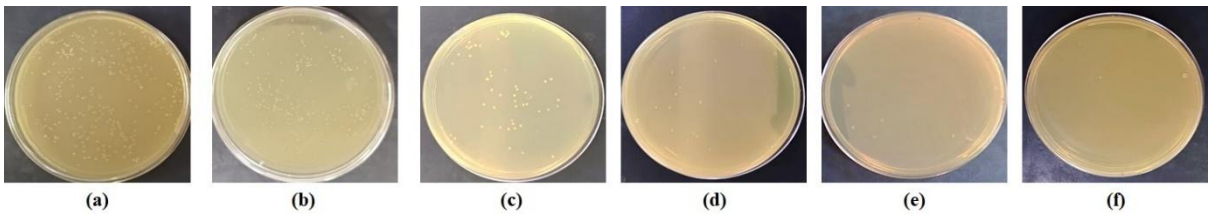


Fig. 5. *S. Typhimurium* after exposure to various chlorophyllin concentration (a) Control without exposure to chlorophyllin solution (b) CFU after exposure to 5 mM (c) CFU after exposure to 10 mM (d) CFU after exposure to 15 mM (e) CFU after exposure to 20 mM (f) CFU after exposure to 25 mM.

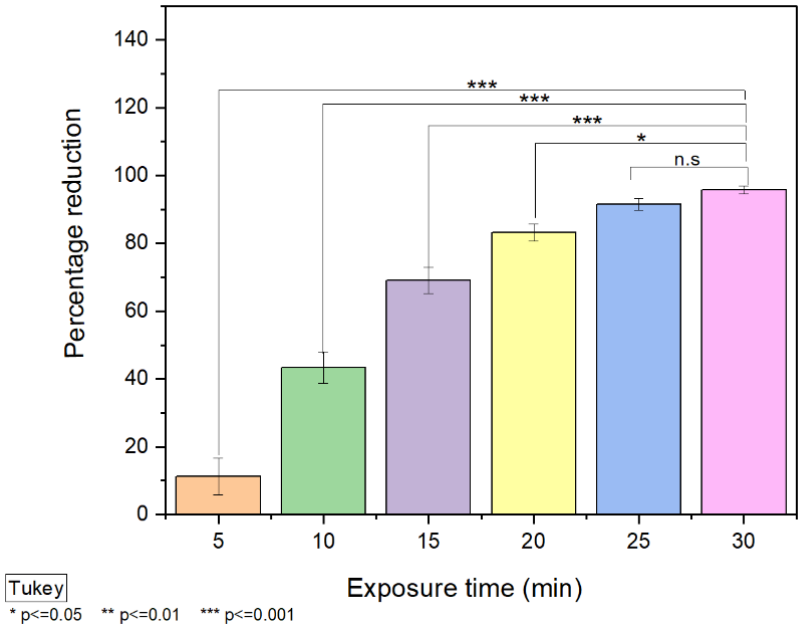


Fig. 6. Effect of exposure time on the photokilling of *S. Typhimurium* using chlorophyllin solution.

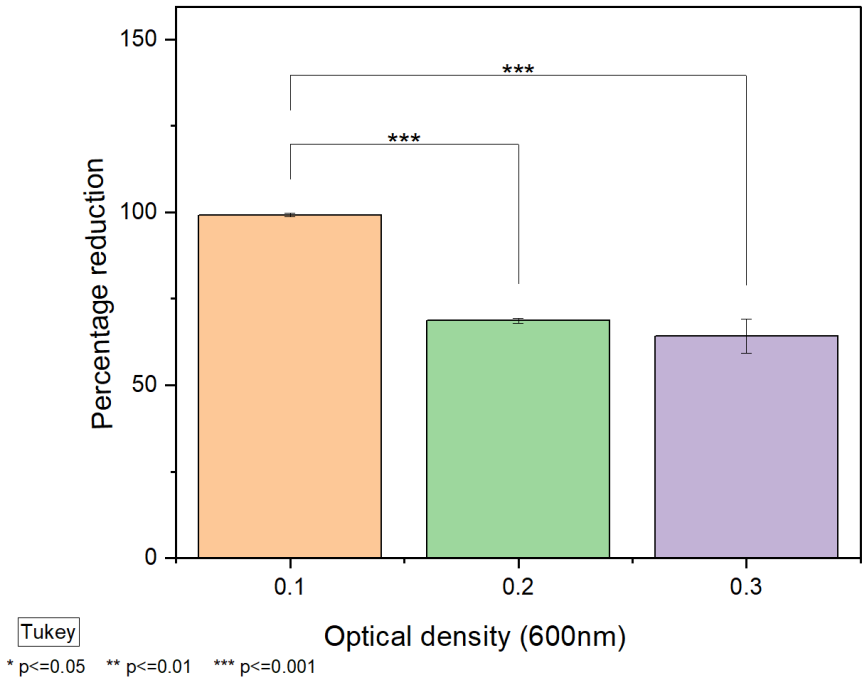


Fig. 7. Effect of initial *S. Typhimurium* inoculum on the photokilling using chlorophyllin solution.

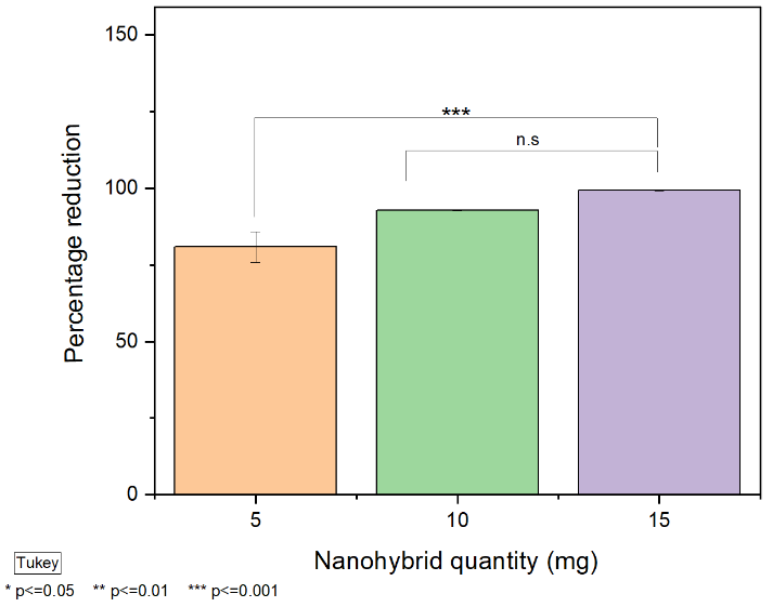


Fig. 8. Effect of Chlorophyllin-$Ca_3(PO_4)_2$ nanohybrid quantity on *S. Typhimurium* photokilling.

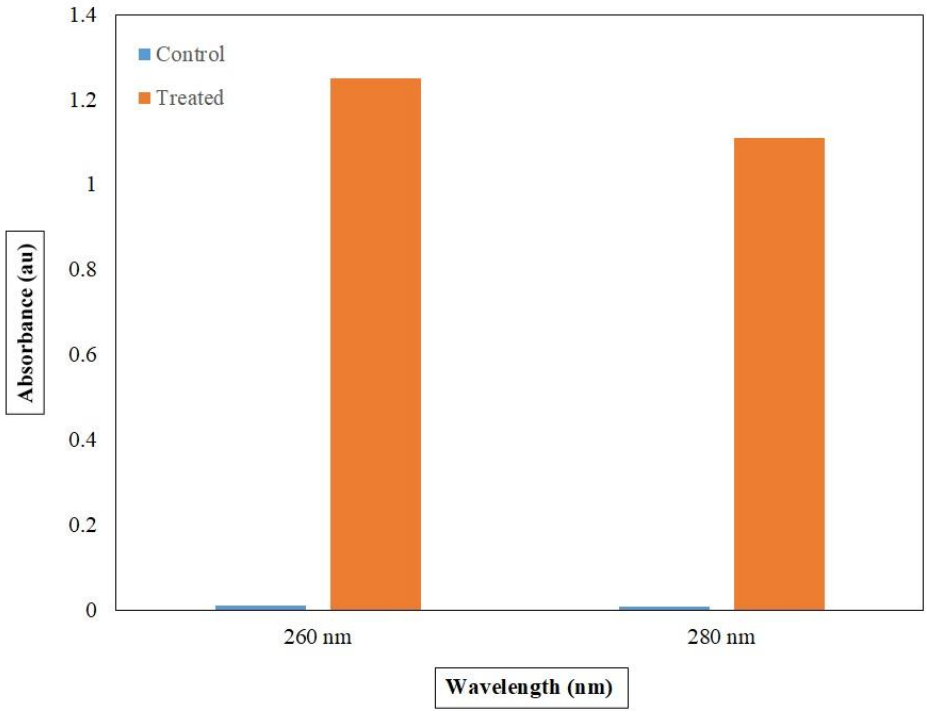


Fig. 9. Study of *S. Typhimurium* membrane integrity after exposure to nanohybrid and light.

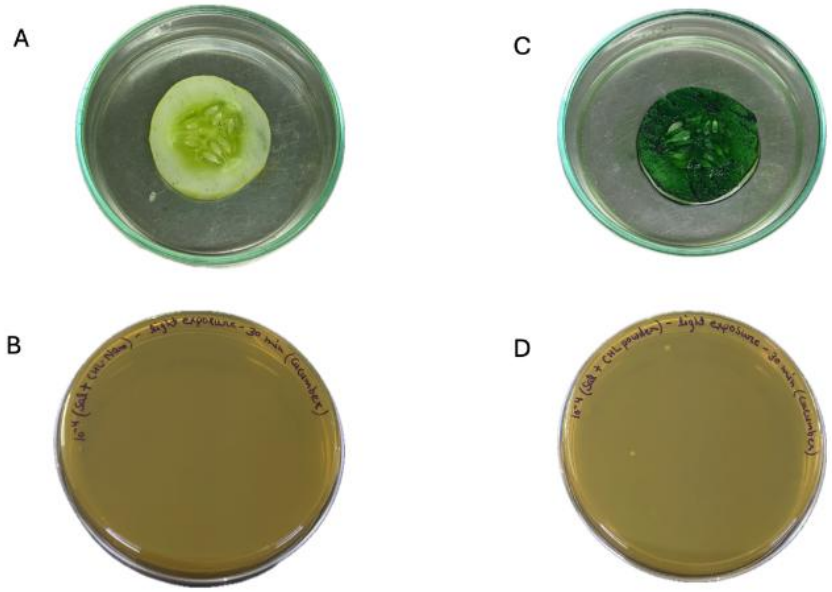


Fig. 10. Decontamination of cucumber slices (a) exposed to Chlorophyllin-$Ca_3(PO_4)_2$ nanohybrid and light (b) CFU of *S. Typhimurium* after exposure (c) exposed to chlorophyllin solution and light (b) CFU of *S. Typhimurium* after exposure.