

Supplimentary Information

Chitosan-Coated Cobalt Ferrite Nanocomplexes with Dual Antimicrobial Activity and Hemocompatibility

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Table S1: Characterization parameters of CFs, CH and CCFs.¹

	Size	Hydrodynamic Diameter (nm)	ζ Potential	M_{\max} (emu/g)
CCFs	(10 ± 0.7 nm) (STEM)	161 ± 5 nm (at 25 °C)	49.9 ± 0.98	25.4 (Dried) 7.5 (Colloid)
CFs	10 nm (Xrd)	NR	8.75 ± 0.26	57.2 (Dried)
CH	NR	NR	31.4 ± 3.14	NR

CCFs: Chitosan-coated cobalt ferrite nanoparticles, CFs: Cobalt ferrite nanoparticles; CH: Chitosan; STEM: Scanning Transmission Electron Microscopy, Xrd: X-ray diffraction; M_{\max} : Maximum Magnetization; NR: Not reported.

Table S2: MIC of CCFs, CHs and CFs against bacteria.

Bacteria	Drug Candidates (μg)		
	CCFs	CH	CFs
<i>B. subtilis</i>	0.000391	0.05	0.0125
<i>E. coli DH5α</i>	0.000391	0.0125	0.0125
<i>E. faecialis</i>	0.000781	0.05	0.0125
<i>S. flex i3C</i>	0.003125	0.0125	0.0125
<i>E. coli Epec</i>	0.000781	0.05	0.0125
<i>S. aureus</i>	0.000781	0.0125	0.0125
<i>E. coli K 12</i>	0.000391	0.0125	0.0125
<i>Salmonella typhi AF-4500</i>	0.000391	0.0125	0.05
<i>Vibrio cholerae</i>	0.000781	0.05	0.0125

CF: Cobalt ferrite nanoparticles, CH: Chitosan, CCF: Chitosan-coated cobalt ferrite nanoparticles

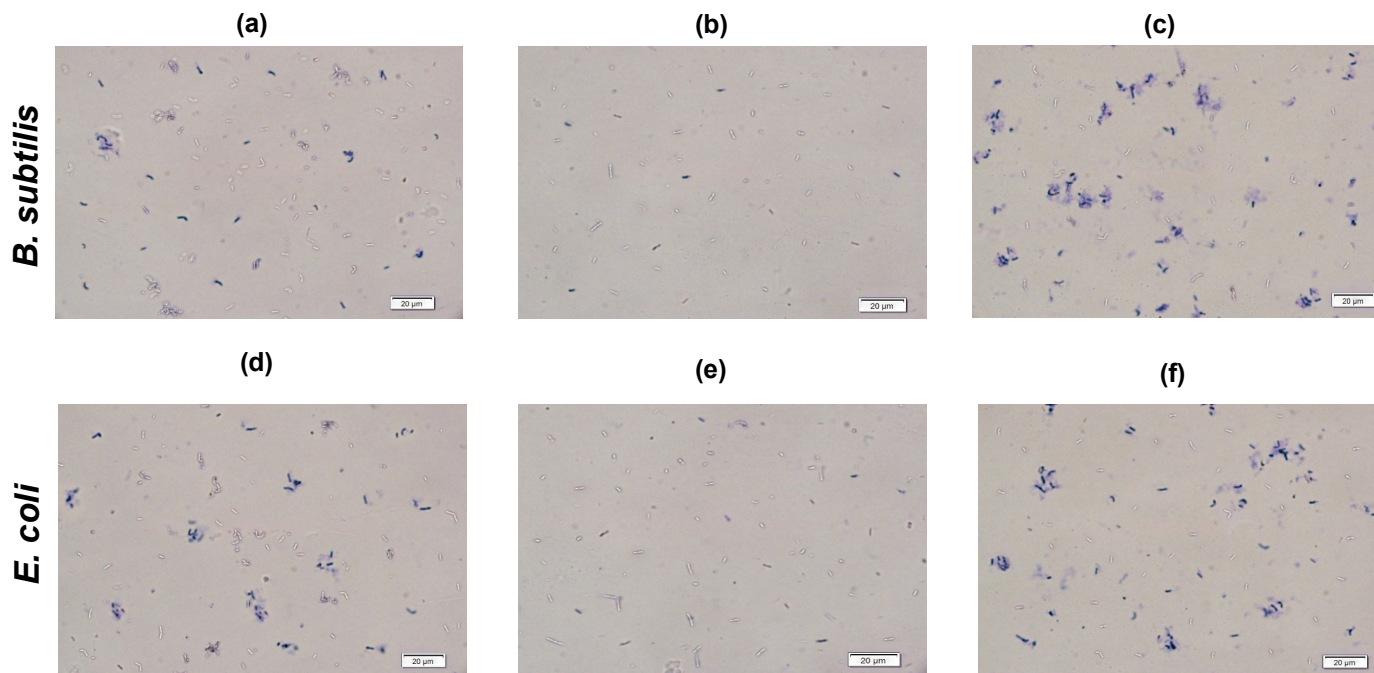


Figure S1: Trypan blue dye exclusion assay showing CH, CFs, and CCFs induced bacterial cell wall damage. *B. subtilis* and *E. coli* in the presence of CH (a, d), CFs (b, e) and CCFs (c, f). Dead cells are indicated as white arrow. The images were taken using Phase Contrast Light Microscope at 40X magnification. CFs: Cobalt ferrite nanoparticles, CH: Chitosan, CCFs: Chitosan-coated cobalt ferrite nanoparticles.

Reference

(1) Shakil, M. S.; Hasan, M. A.; Uddin, M. F.; Islam, A.; Nahar, A.; Das, H.; Khan, M. N. I.; Dey, B. P.; Rokeya, B.; Hoque, S. M. In Vivo Toxicity Studies of Chitosan-Coated Cobalt Ferrite Nanocomplex for Its Application as MRI Contrast Dye. *ACS Appl Bio Mater* **2020**, 3 (11), 7952-7964. DOI: 10.1021/acsabm.0c01069 From NLM.