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The Journal of Biomedical Research, 0 (0): 1–3

Original Article

JBR

GSH-responsive curcumin/doxorubicin encapsulated Bactrian camel serum albumin nanocomposites with synergistic effect against lung cancer cells

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Supplementary Table 1 **Hydrodynamic diameter and PDI of prepared CSA-NPs at different drug/protein ratio**

Drug/Protein	CCM CSA-NPs		Dox CSA-NPs	
	Hydrodynamic size (nm)	PDI	Hydrodynamic size (nm)	PDI
0.001	145.9±10.4	0.07±0.01	200.5±15.8	0.08±0.02
0.005	140.6±17.6	0.09±0.01	197.6±10.4	0.09±0.02
0.010	142.6±12.1	0.09±0.02	195.3±7.8	0.07±0.03
0.020	178.3±17.6	0.08±0.03	199.6±10.3	0.11±0.02
0.050	208.6±10.9	0.07±0.03	210.5±9.8	0.12±0.02
0.100	259.6±18.2	0.13±0.04	208.3±14.7	0.07±0.03

Data are represented as mean±SD (n=3).

Supplementary Table 2 **Results of recovery analysis**

Formulation CCM/Dox CSA-NPs	Concentration (μg/mL)	Added (μg/mL)	Measured (μg/mL)	Recovery (%)
CCM	124.3±11.5	50.0	176.5±11.5	106.8±2.3
		100.0	230.2±9.6	105.8±3.8
		200.0	334.2±9.9	104.3±2.7
Dox	138.8±7.3	50.0	189.2±7.9	100.8±1.3
		100.0	238.6±7.04	99.8±1.9
		200.0	341.3±8.5	101.2±1.0

Data are represented as mean±SD (n=3).

Supplementary Table 3 **Drug loading efficiency and drug entrapment efficiency of prepared CSA-NPs at different drug/protein ratio**

Drug/Protein	CCM CSA-NPs		Dox CSA-NPs	
	DLE (%)	DEE (%)	DLE (%)	DEE (%)
0.01	1.6±0.6	68.3±3.9	1.4±0.3	57.3±3.6
0.02	3.9±0.9	76.9±5.3	3.1±0.6	66.2±5.2
0.05	6.9±0.5	67.2±2.8	7.5±0.7	66.3±2.6
0.10	7.8±1.2	44.5±5.4	8.1±0.7	46.5±4.1

Data are represented as mean±SD (n=3).

△These authors contributed equally to this work.

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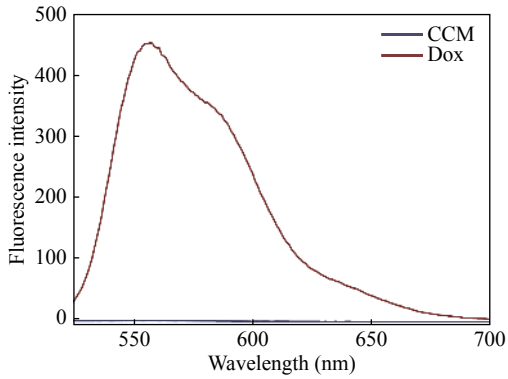
Received 05 March 2019, Revised 28 April 2019, Accepted 04 June 2019, Epub 30 August 2019

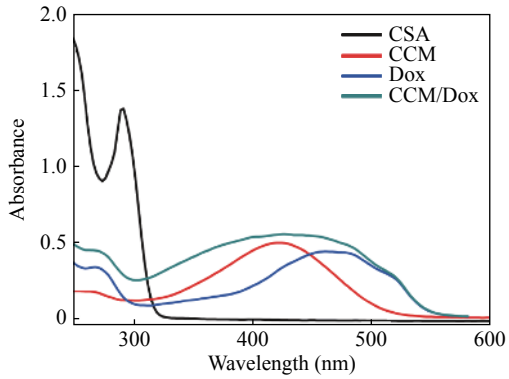
CLC number: R734.2, Document code: A

The authors reported no conflict of interests.

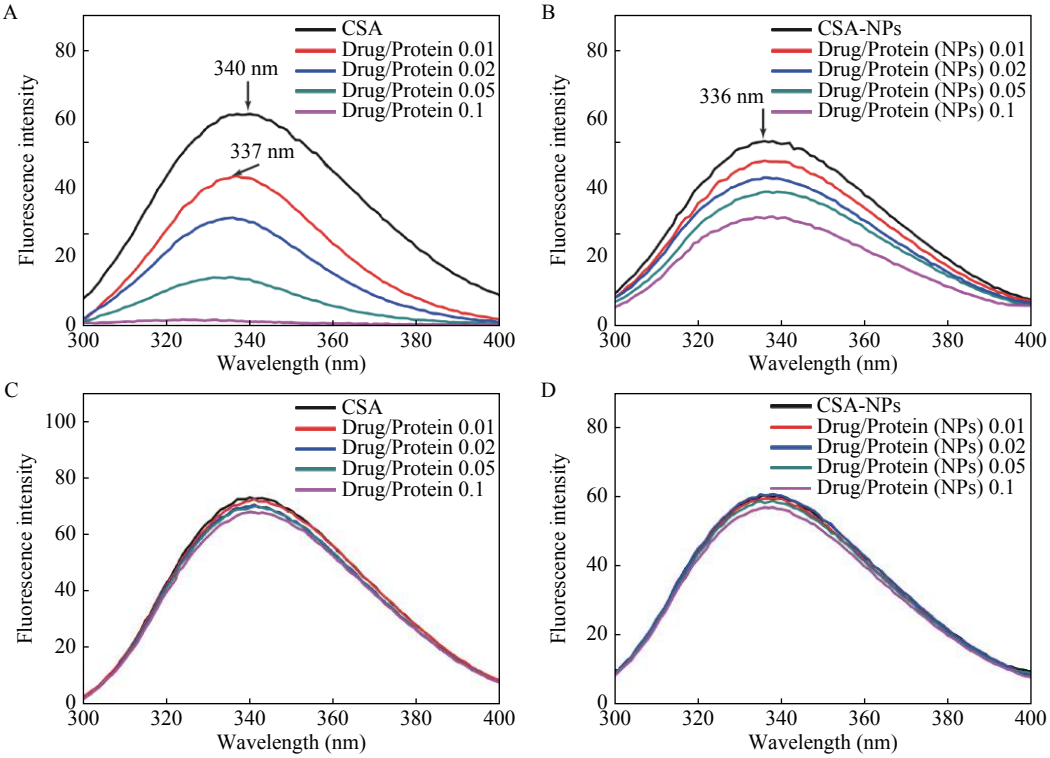
https://doi.org/10.7555/JBR.33.20190036



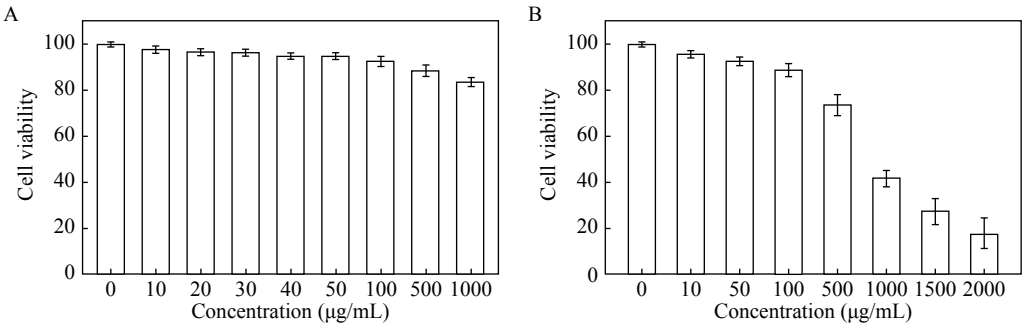
Supplementary Fig. 1 **Fluorescence spectra of CCM and Dox.** Emission spectra for CCM and Dox with the extraction wavelength fixed at 480 nm.



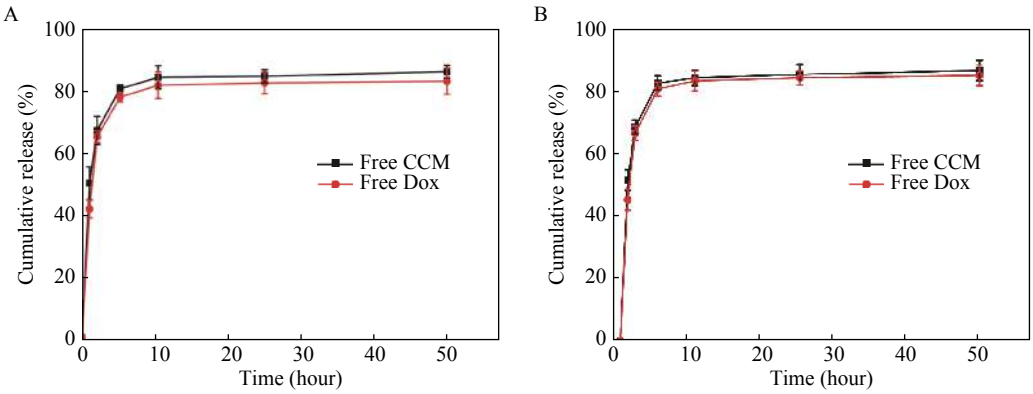
Supplementary Fig. 2 **UV-vis spectra of free drugs.** UV-vis spectra of CCM, Dox and CCM/Dox mixture solution (weight ratio of 1:1).



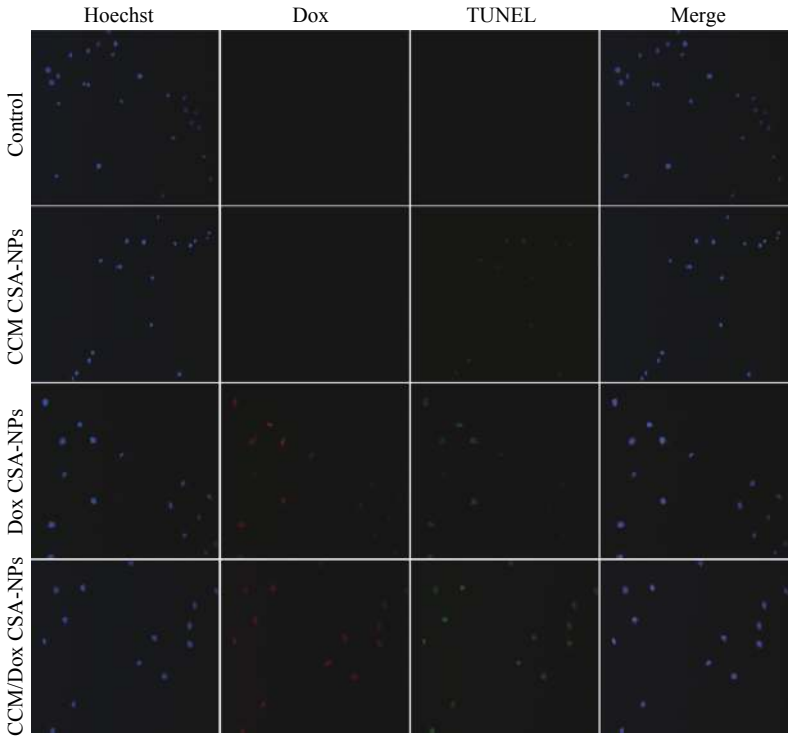
Supplementary Fig. 3 **Structural analysis of CSA solutions and CSA-NPs.** A and B: Fluorescence changes of CSA (A) and CSA-NPs (B) after adding different concentrations of CCM. C and D: Fluorescence signal changes of CSA (C) and CSA-NPs (D) after adding different amounts of Dox. The concentration of CSA was set at 2 mg/mL.



Supplementary Fig. 4 ***In vitro*** **cytotoxicity of nanoparticles against A549 cells.** A: Cell viability of A549 cells incubated with different concentrations of blank CSA-NPs. B: Cell viability of A549 cells incubated with different concentrations CCM CSA-NPs. All the data are represented as mean±SD (n=3).



Supplementary Fig. 5 ***In vitro*** **drug release profile at different pHs.** A: CCM and Dox in PBS (pH 7.4) buffer; B: CCM and Dox in NaAc-HAc (pH 5.0) buffer. All the data are represented as mean±SD (n=3).



Supplementary Fig. 6 **Cellular uptake of prepared drug-loaded CSA-NPs.** Fluorescence microscopy image of A549 cells incubated with CCM CSA-NPs, Dox CSA-NPs, and CCM/Dox CSA-NPs for 6 hours. Nuclei were stained with Hoechst (blue), doxorubicin (red), and nuclei of apoptotic cells with TUNEL-positive signal (green).