Supporting Information

Cerberus Nanoparticles: Cotargeting of Mitochondrial DNA and Mitochondrial Topoisomerase I in Breast Cancer Cells

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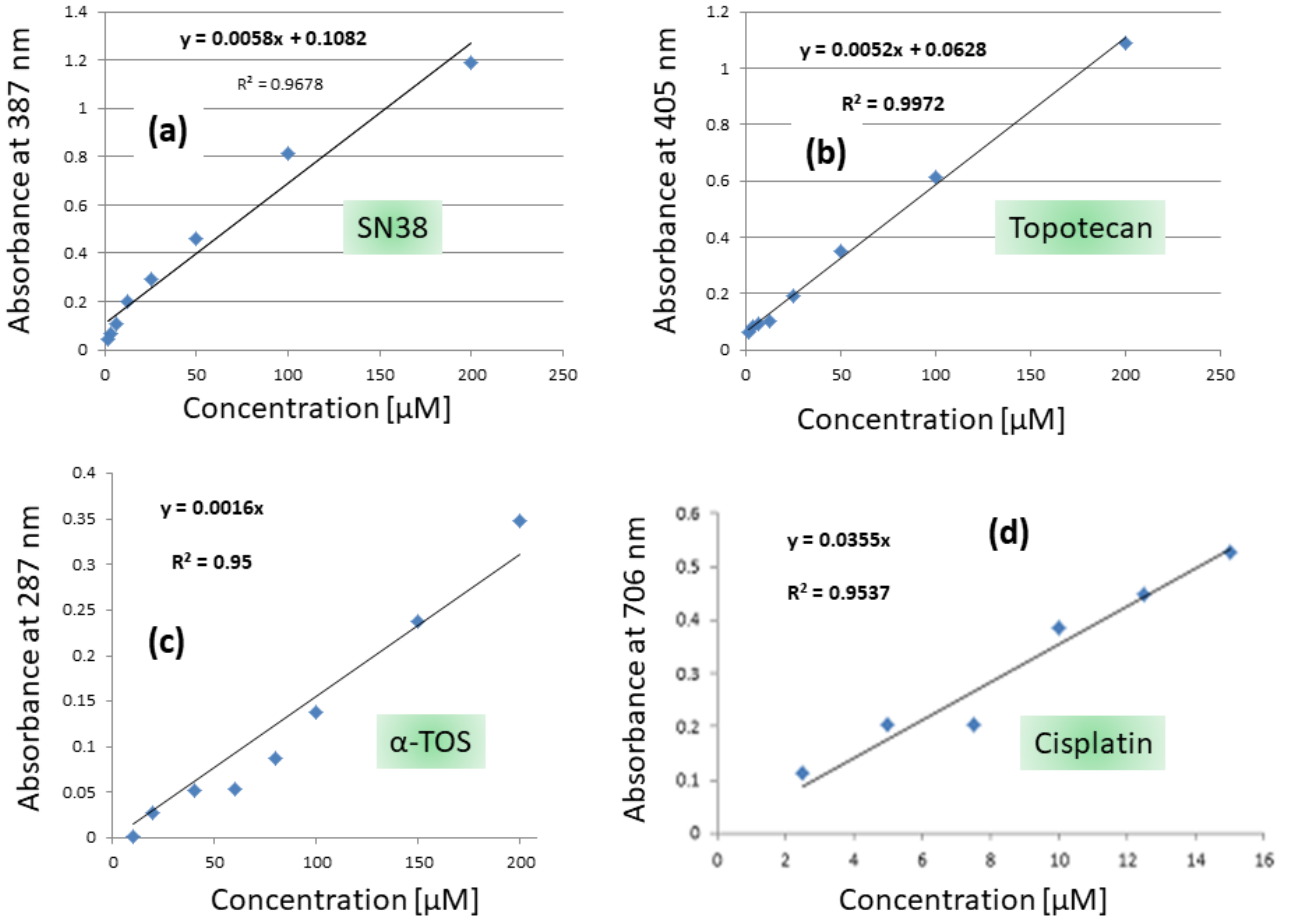

Figure S1: Absorbance versus concentration calibration graph of (a) SN38, (b) topotecan, (c) α-TOS and (d) cisplatin from UV-Vis spectroscopy at characteristic wave lengths.

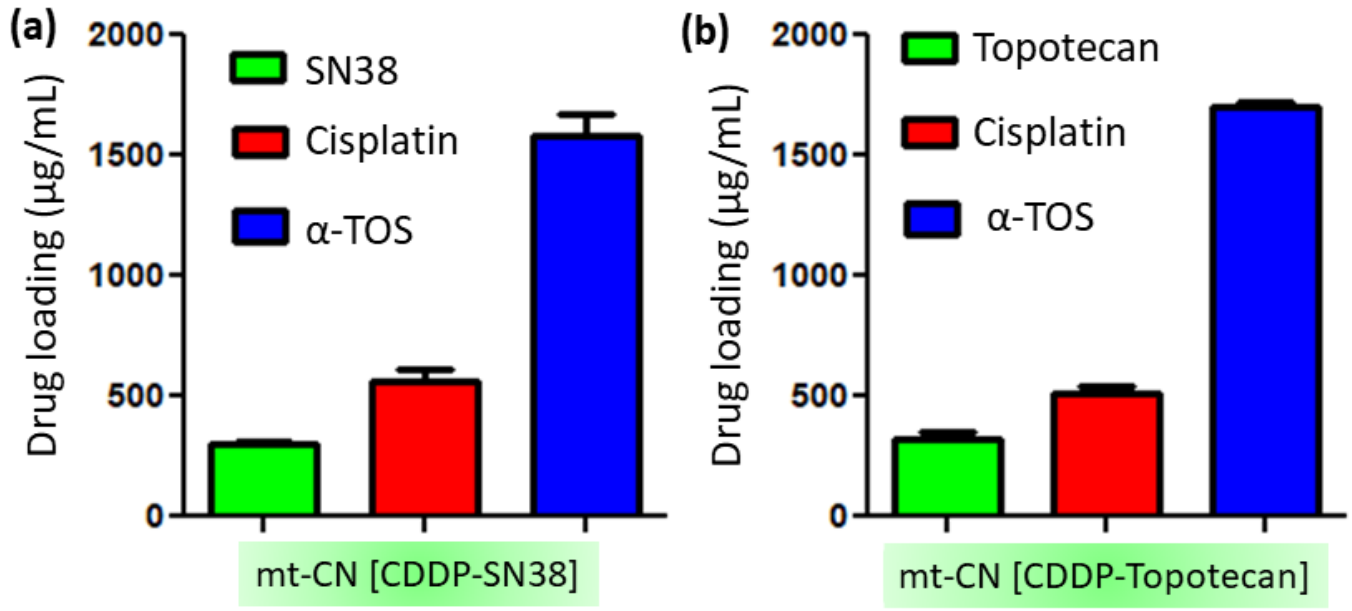

Figure S2: (a) Loading of SN38, cisplatin and α-TOS in mt-CN [CDDP-SN38] and (b) loading of topotecan, cisplatin and α-TOS in mt-CN [CDDP-Topotecan] from UV-Vis spectroscopy.

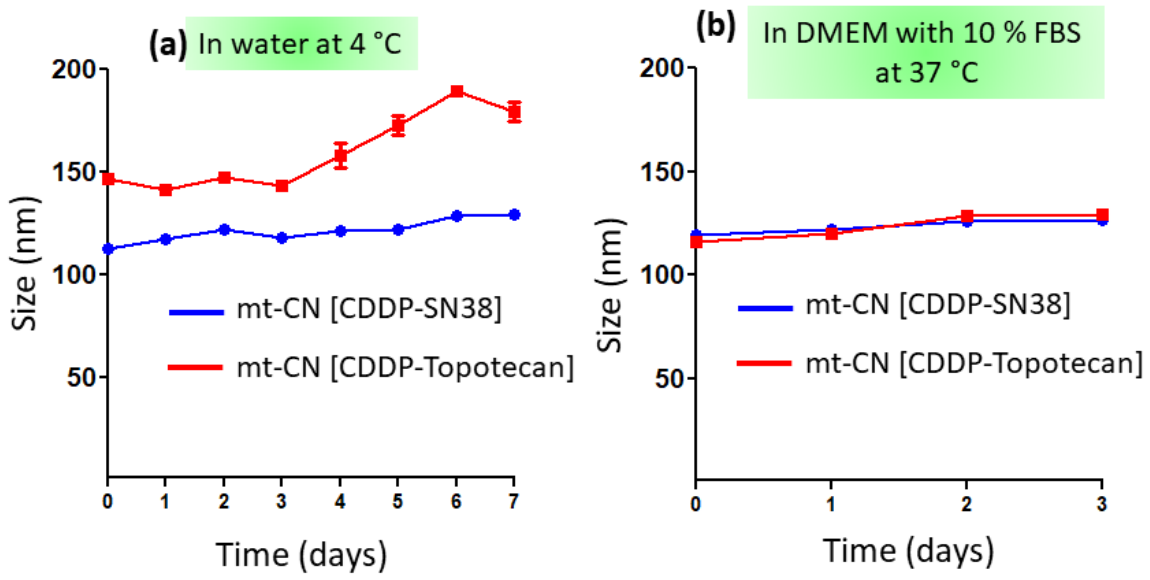

Figure S3: Stability of mt-CN in (a) water at 4°C for 7 days and (b) in DMEM cell culture media with 10% FBS at 37°C for 3 days.

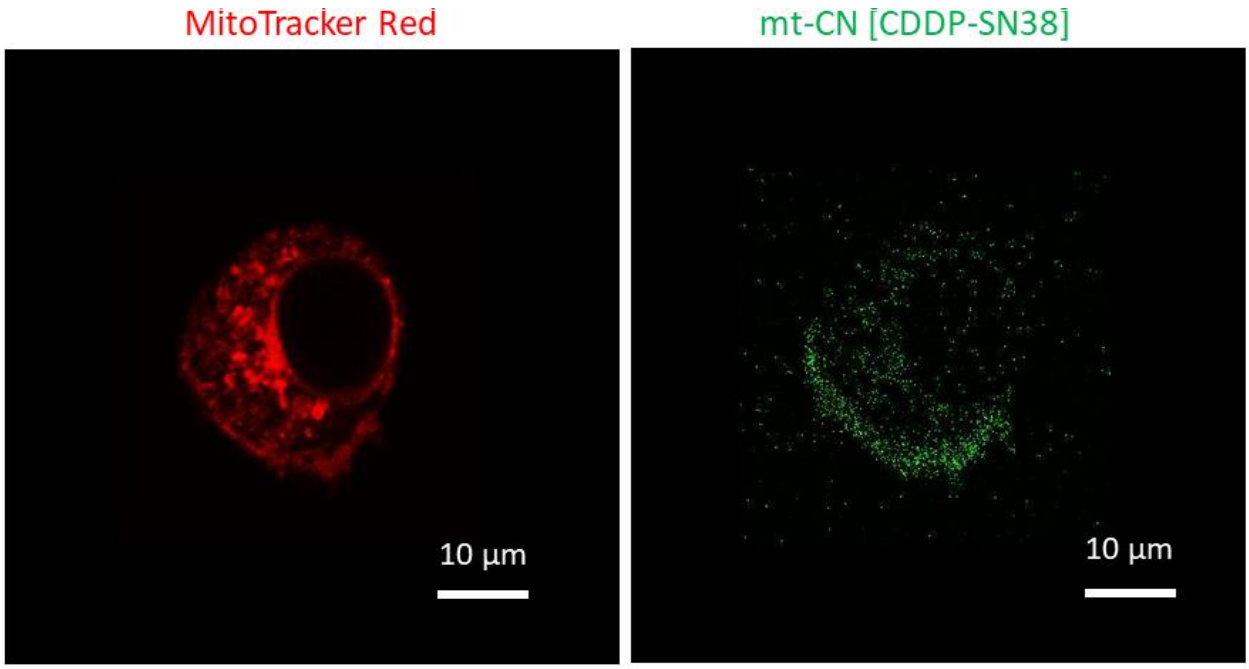

Figure S4: 3D-Z-stack confocal laser scanning microscopy (CLSM) images of MCF7 cells treated with green fluorescence mt-CN [CDDP-SN38] for 12 h showing that the nanoparticle internalized into the cells. Each slice is having 0.34 µm Z resolution.

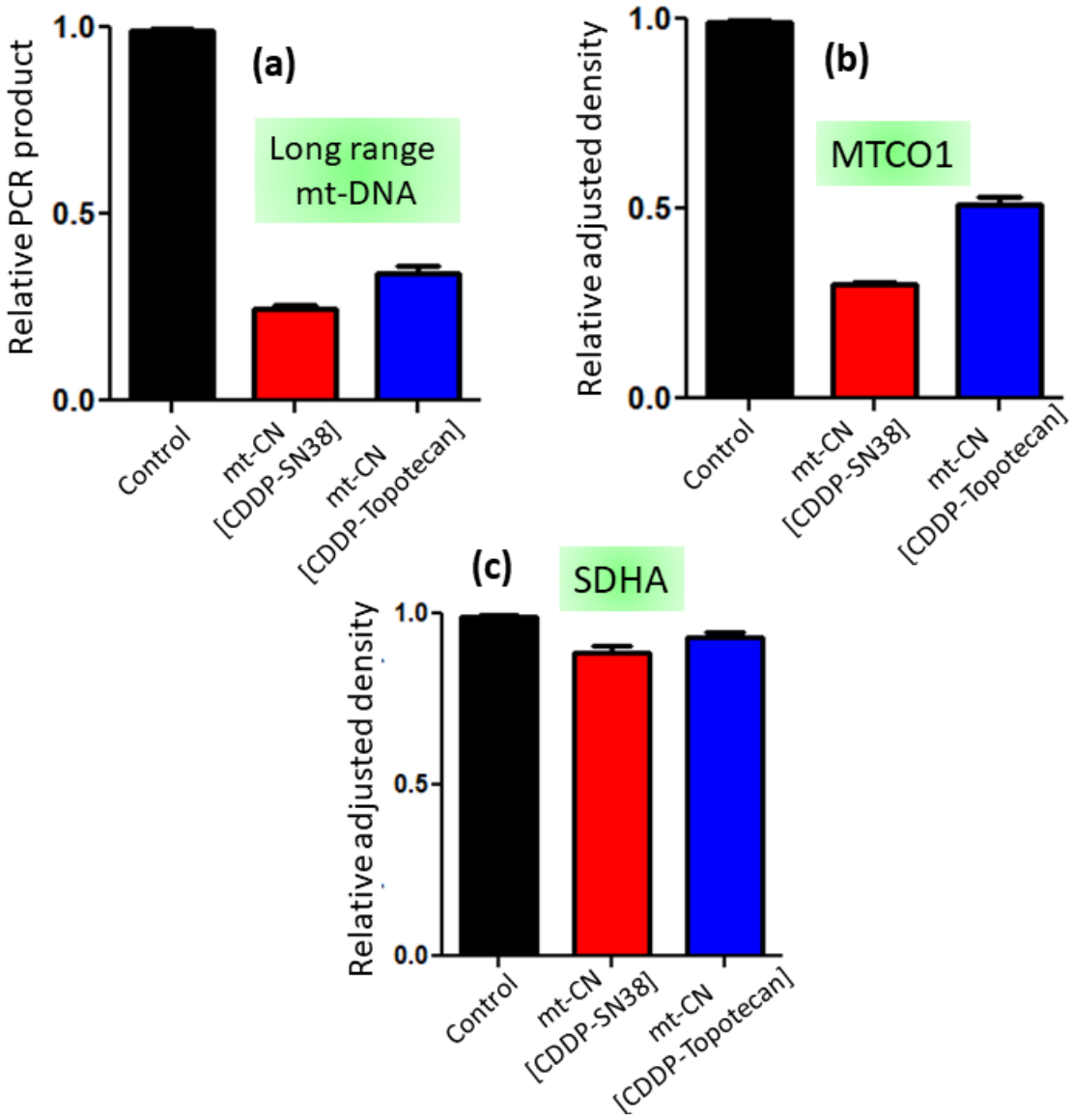

Figure S5: Quantification of (a) long-range mt-DNA fragments from PCR assay, (b) expression of MTCO-1 (c) expression of SDHA after treating MCF7 cells with mt-CN for 24 h.

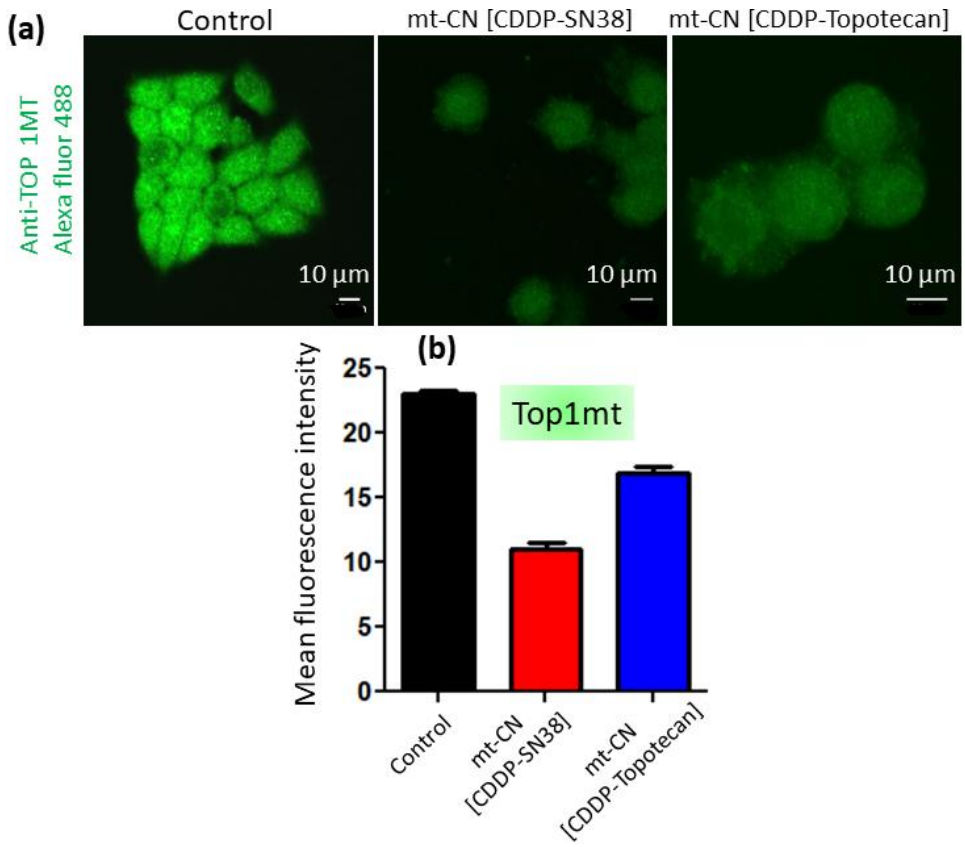

Figure S6: (a) CLSM images of mitochondrial Topoisomerase I in MCF7 cells after treatment with mt-CN for 24 h followed by staining with Anti-Top1MT-Alexa Fluor 488 antibody (green fluorescent). Scale = 10 µm. (b) expression of Top1mt from Western blot analysis after treating MCF7 cells with mt-CN for 24 h.

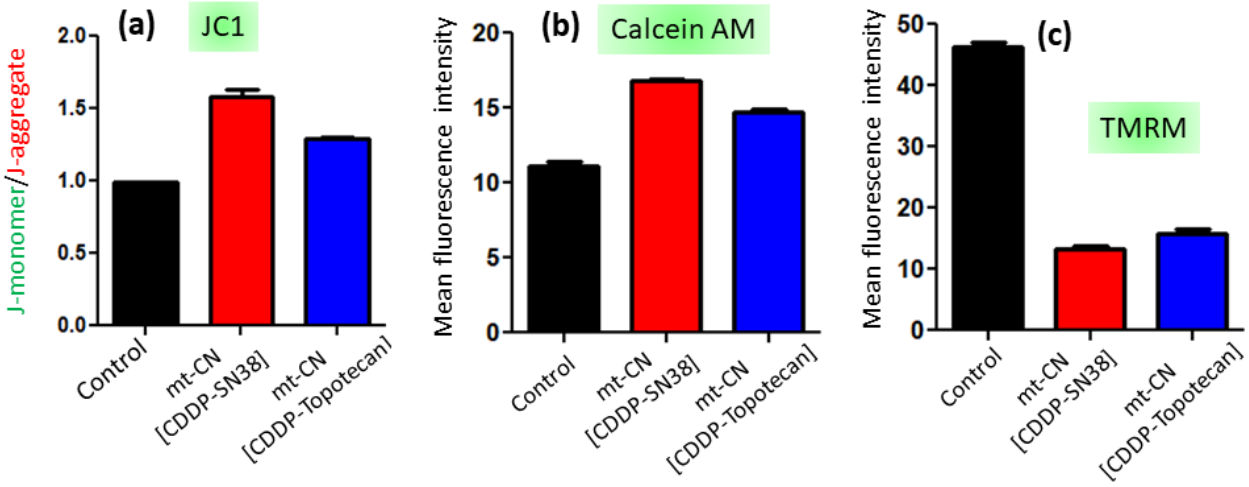

Figure S7: Confocal laser scanning microscopy based quantification of (a) J-monomer/J-aggregate in JC1 assay, (b) mean fluorescence intensity of Calcein AM and (c) mean fluorescence intensity of TMRM from MCF7 cells after treatment with mt-CNs for 24 h

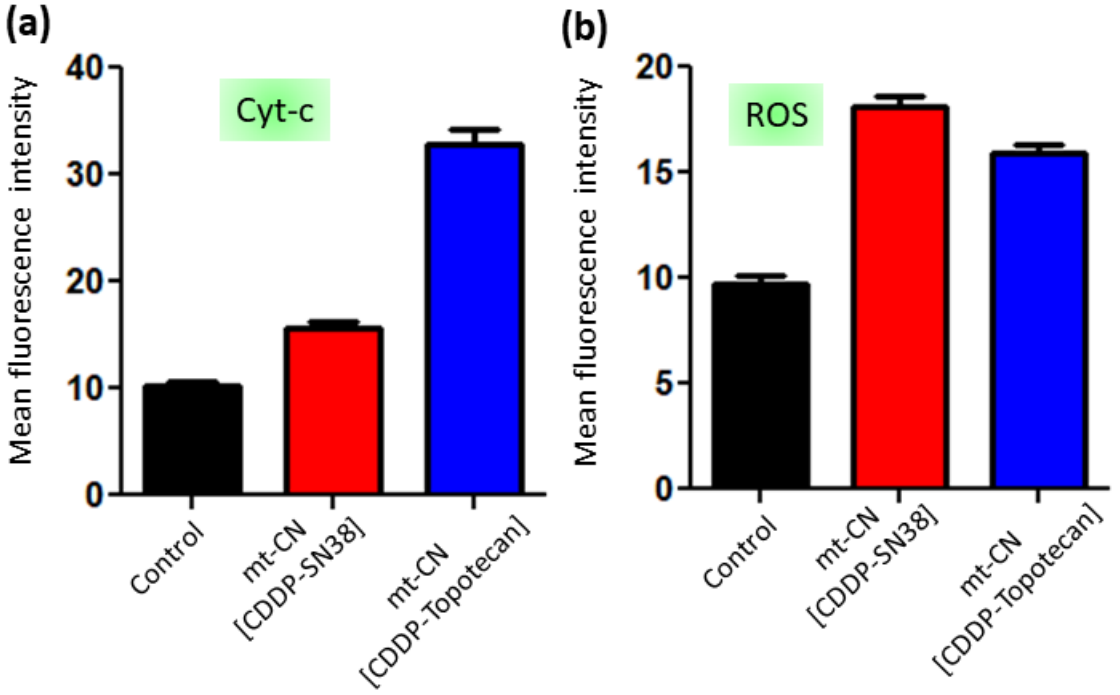

Figure S8: Quantification of mean fluorescence intensity from confocal microscopy of (a) cytochrome c and (b) reactive oxygen species (ROS) in MCF7 cells after treatment with mt-CN for 24 h.

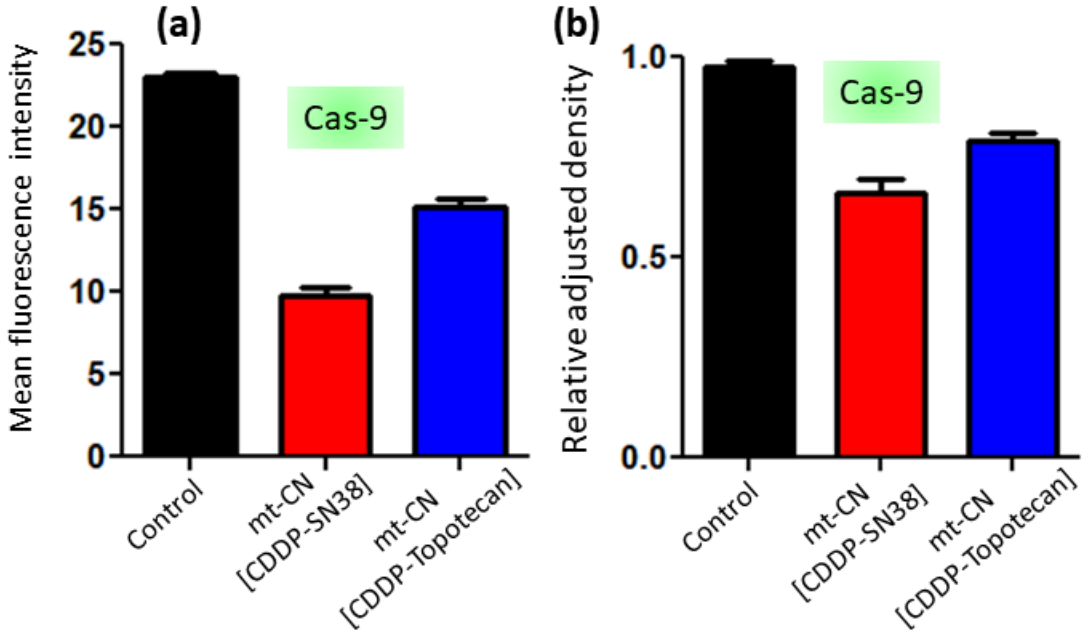

Figure S9: Quantification of (a) mean fluorescence intensity of caspase-9 from confocal microscopy and (b) expression of caspase-9 from gel electrophoresis in MCF7 cells after treatment with mt-CN for 24 h.

Table S1: Quantification of co-localization of mt-CNs into mitochondrial determined from confocal laser scanning microscopy.

		mt-CN [CDDP-SN38]	mt-CN [CDDP-Topo]
Image Channels		C1 (green) C2 (red)	C1 (green) C2 (red)
Pearsons' Correlation Coefficient	r	0.8	0.6
Manders Coefficients	M1 (fraction of C2 overlapping C3)	0.9	0.9
	M2 (fraction of C3 overlapping C2)	0.9	1.0
Percent volume colocalization		***67.7%***	***55.3%***