Electronic Supplementary Information

Carbon Dots as a Trackable Drug Delivery Carrier for Localized Cancer Therapy in vivo

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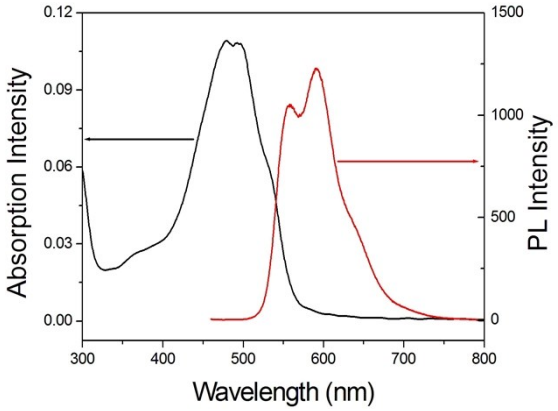

Fig. S1. Absorption and PL spectrum of DOX.

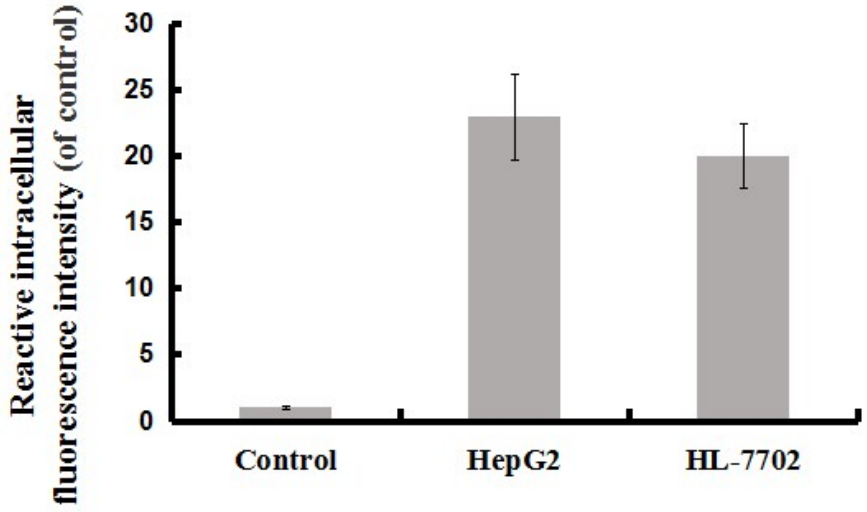

Fig. S2. The mean fluorescent intensity (MFI) of internalized CDs in both HepG2 and HL-7702 cells after they were exposed to CDs at 3 h.

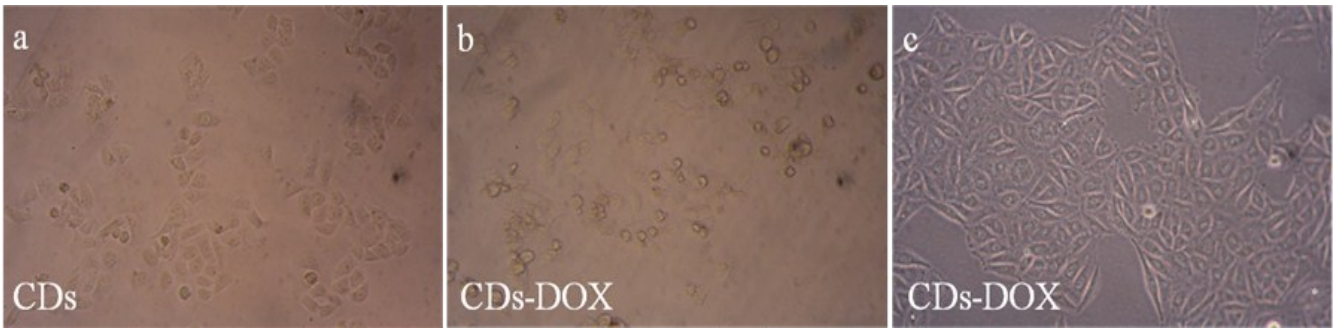

Fig. S3. Morphology of HepG2 (a, b) and HL-7702 cells (c) incubated for 96 h with CDs and the CDs-DOX conjugates respectively. (a) The cells were treated alone with 0.2 ml of CDs (5 μg/ml); (b) The cells were treated with 0.2 ml of CDs-DOX conjugates (5 μg/ml). (c) The cells were treated with 0.2 ml of CDs-DOX conjugates (5 μg/ml).

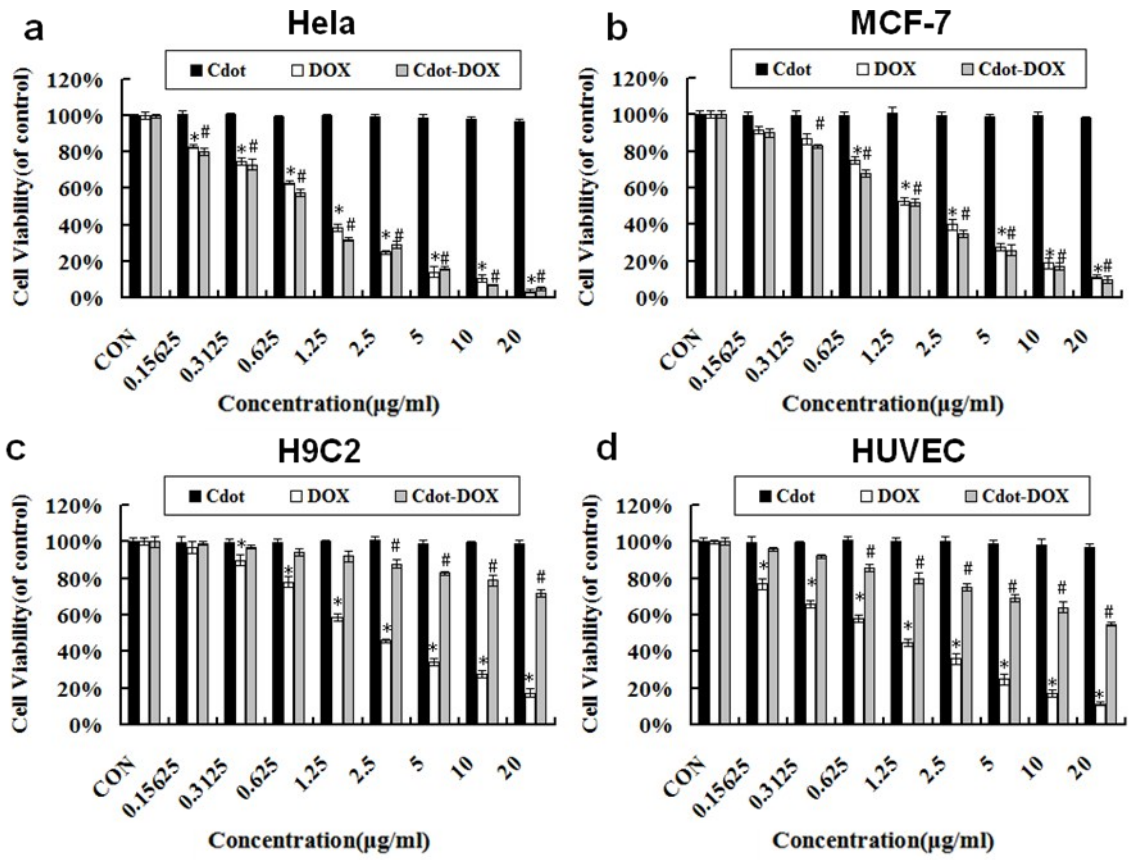

Fig. S4. Effect of DOX concentration on the viability Hela (a), MCF-7 (b), H9C2 (c), and HUVEC (d) cells after co-incubation with CDs, DOX and CDs-DOX conjugates for 48 h by SRB assay. The cytotoxicity of DOX was dose dependent. *P < 0.01 versus the cells treated with the DOX drugs; #P < 0.01 versus the cells treated with the CDs-DOX conjugates.

To verify the universality of the CDs-DOX drugs to the cancer cells, two other cancer cell lines, namely Hela from human cervical carcinoma and MCF-7 from human breast adenocarcinoma, and two other normal cell lines, namely cardiomyocytes (H9C2) and human umbilical vascular endothelial cell (HUVEC), were also employed for the same set of evaluation. As shown in Fig. S4, when the CDs alone were injected to the four cell lines, with the increase of the CDs' concentration, there showed no differences on the cell viability, which proved again that the CDs prepared by our method was safe to the four cell lines. However, when the DOX alone was injected to the four cell lines, with the increase of the DOX' concentration, the cell viability showed the obvious decline trend, which proved well the therapeutic effect of the DOX drugs. Most noteworthy is that when the CDs-DOX nanoformulation were applied to the cancer cells (Hela (Fig. S4a) and MCF-7 (Fig. S4b)) and normal cells (H9C2 (Fig. S4c) and HUVEC (Fig. S4d)), the cell viability results clearly show the selective therapeutic effect of the CDs-DOX drugs in cancer cells. Taken together, these results showed the targeted therapeutic function of CDs-DOX nanoformualtion to cancer cells is universal to all malignant cells that have lower pH compared to normal cells.