

Supplementary Information

Nano Graphene Oxide – Hyaluornic Acid Conjugate for Target Specific Cancer Drug Delivery

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Materials and Methods

Sodium salt of hyaluronic acid (HA) with a molecular weight (MW) of 100 kDa was obtained from Lifecore Co. (Chaska, MN). Hexamethylenediamine (HMDA), chloroacetic acid and Epirubicin hydrochloride were purchased from Sigma-Aldrich (St. Louis, MO). 1-Ethyl-3-(3-dimethylaminopropyl)carbodiimide (EDC) hydrochloride was obtained from Tokyo Chemical Industry Co. (Tokyo, Japan). B16F1 murine melanoma was purchased from Korean Cell Line Bank (Seoul, Korea). Detroit 551 human fetal skin fibroblast was obtained from ATCC (Manassas, VA). Dulbecco's Modified Eagle's Medium (DMEM), 4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid (HEPES), fetal bovine serum (FBS), antibiotics, phosphate buffered saline (PBS) tablet and 1 mM solution of Lyotracker Green DND-26 were purchased from Invitrogen Co. (Carlsbad, CA). MTT assay kit was purchased from Promega Co. (Madison, WI). The 8 well glass culture slides with polystyrene vessels were obtained from BD Falcon (Franklin Lakes, NJ). All reagents were used without further purification.

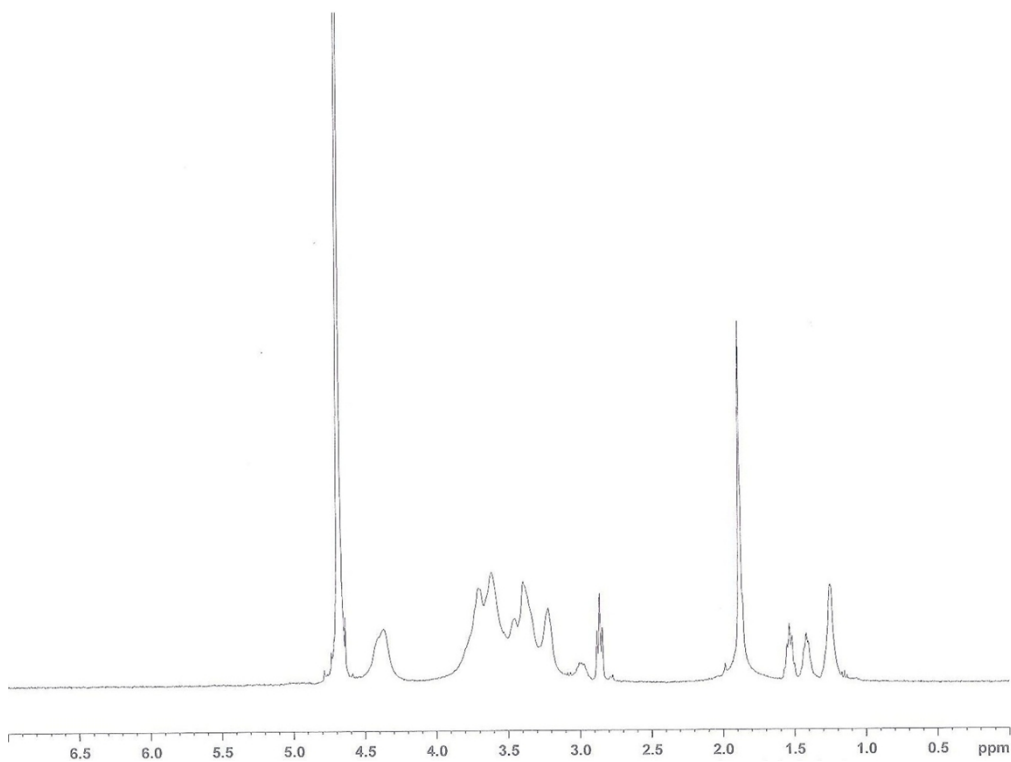


Fig. S1. ¹H NMR spectrum of HA-HMDA.

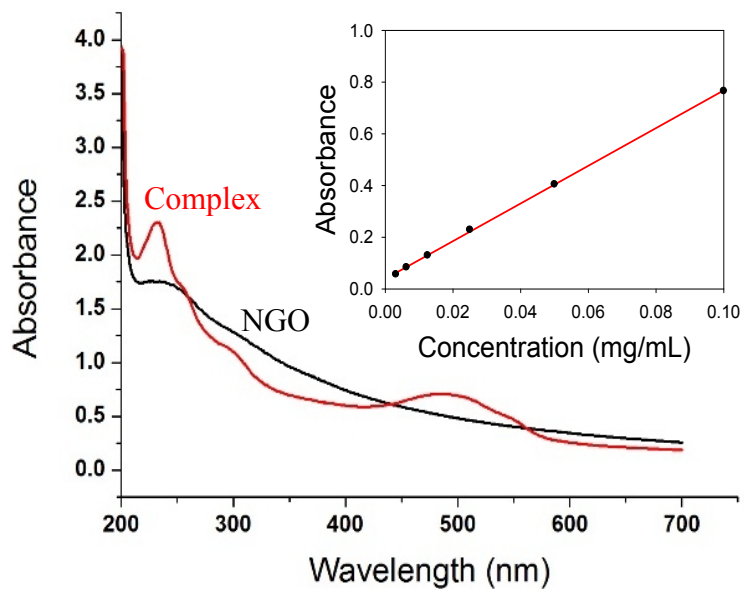


Fig. S2. UV-Vis absorbance spectra of NGO and Epi/NGO-HA. The concentration of epirubicin tested in the measurement was 80 μ g/mL.

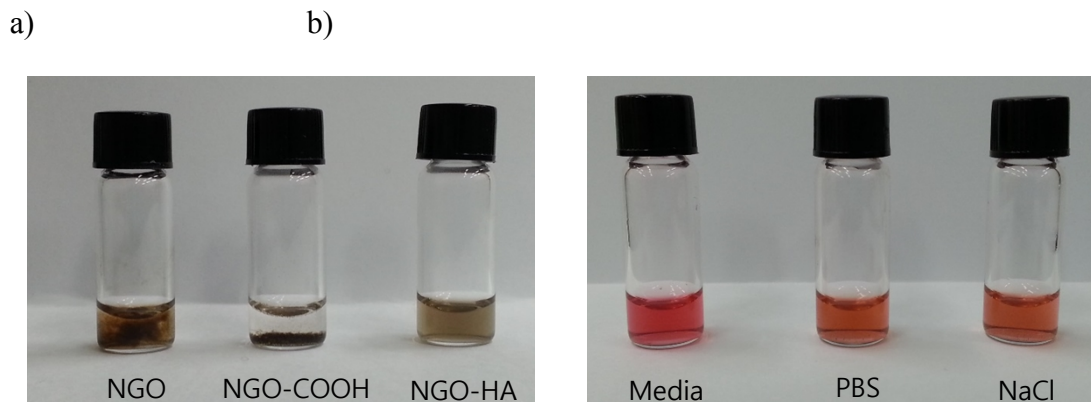


Fig. S3. (a) The stability of NGO, NGO-COOH and NGO-HA in 100 mM NaCl solution at the NGO concentration of 50 $\mu\text{g/mL}$. (b) The stability of epirubicin/NGO-HA complex in cell culture media, PBS and 100 mM NaCl solution at the final epirubicin concentration of 20 $\mu\text{g/mL}$, respectively.

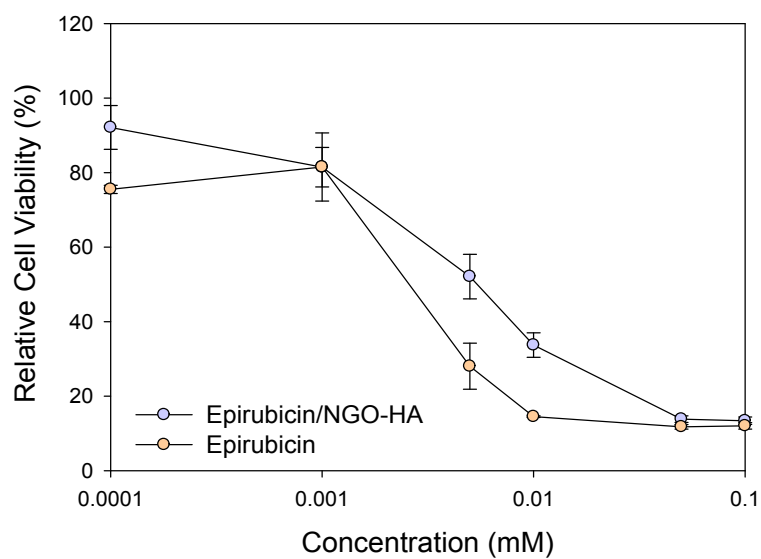


Fig. S4. Relative cell viability after incubation of B16F1 cells with Epirubicin/NGO-HA complex.

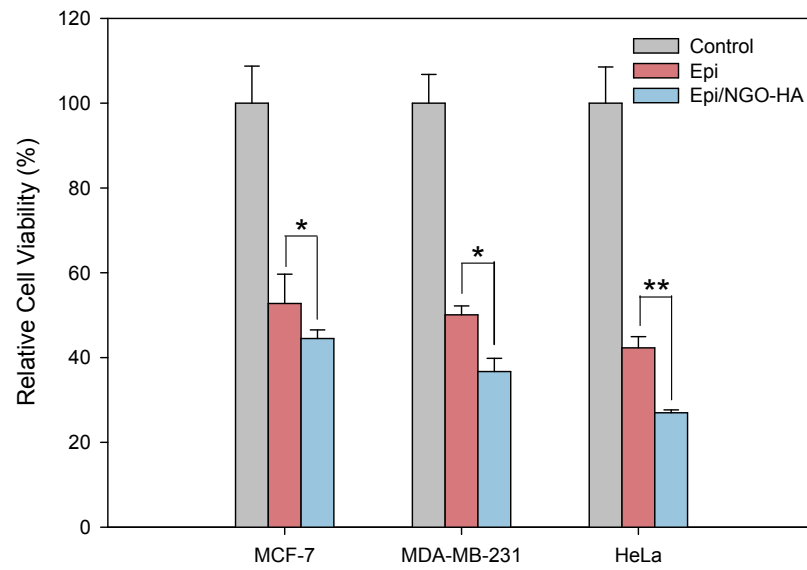


Fig. S5. Relative cell viability after incubation of MCF7, MDA-MB-231 and HeLa cells for 30 min with free epirubicin and epirubicin/NGO-HA complex (n = 5, * $P < 0.05$, ** $P < 0.01$). The epirubicin concentration in the samples was 20 $\mu\text{g/mL}$.