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Docetaxel-loaded Nanohorn-streptavidin-antibody for Anti-cancer Drug Delivery JIANXUN XU, MASAKO YUDASAKA, MINFANG ZHANG, JST/SORST, NEC, 34 Miyukigaoka, Tsukuba, Ibaraki 305-8501, SUMIO IJIMA, Meijo University, Nagoya 468-8502, Japan — Single wall carbon nanohorn (SWNH) is a new kind of nano-carbon tubule having horn-like structure at its tip. The tube diameters are 2 to 5 nm, and about 2,000 SWNHs assemble to form a spherical aggregate. SWNH is an attractive candidate for drug delivery, especially promising to carry anticancer drug, many of which are not water soluble and highly toxic. We incorporated Docetaxel (Doc), an anticancer drug used for stomach cancer and others, into hydrogen peroxide treated SWNH (SWNHox). By using carboxylic groups on SWNHox, we attached amine-PEO3-biotin, and then streptavidin to biotin. The streptavidin moiety on SWNH makes it easy to attach some other biotinylated molecules, thus we introduced a cancer targeting ligand, anti-tumor associated glycoprotein, to the SWNH system. Due to the targeting effect of the antibody, the cells were effectively killed when they were incubated with the Doc SWNHox-streptavidin-antibody system.

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