

Novel Cisplatin-loaded Peptide Nanostructure as Anticancer Agent

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The cisplatin is one of the anticancer agent using for cancer treatment as platinum-based anticancer material. Also it is showing anticancer effect in variety of cancers (i.e., ovarian cancer, testis cancer, etc.) and solid tumors (i.e., head tumor, neck tumor, etc.). The cisplatin can prevent proliferation of cancer cells by inhibiting cell division and followed by decreasing the size of existing cancer cells. However, the cisplatin has numerous side effects such as ototoxicity, nephrotoxicity, neurotoxicity as well as highly effective anticancer activity. To overcome these limitations, we used tyrosine-rich peptide (YC₇) as drug delivery scaffold because of its good bio-stability, and then expected that cytotoxicity was reduced by YC₇ peptide. Herein, we developed a cisplatin-loaded peptide nanostructure for nano-drug delivery system driven by gold ion. The resulting cisplatin-loaded self-assembly nanostructure was identified by UV-Vis, TEM, SEM and ICP-OES analysis. To evaluate the efficiency and activity as a novel anticancer drug, YC₇@Cis nanostructures were stepwise applied to cancer cellular model and mouse model.

Keyword : cisplatin, peptide self-assembly, anticancer agent