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Procedural Methods in Cancer Therapy

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Abstract

Different kinds of small peptides and proteins are also effective in active targeting. Angiopep-2 is a peptide that has raised great interest in the treatment of brain cancer, because it binds to low-density lipoprotein receptor-related protein-1 of endothelial cells in the BBB, and it is also overexpressed in glioblastoma cancer cells.

Keywords: Docetaxel; Epithelial Cells; Nanoparticles; Nanocarriers; Growth factor; Antibodies

Introduction

Bombesin peptide conjugated to poly-nanoparticles loaded with docetaxel was used to target the gastrin-releasing peptide receptor, overexpressed on cell surface of prostate, breast, ovarian, pancreatic and colorectal cancer cells. Transferrin is a serum glycoprotein overexpressed on many solid tumours, especially on glioblastoma multi-form cells, and on epithelial cells of the BBB. Transferrin-conjugated chitosan-PEG nanoparticles delivering paclitaxel exhibited a higher cytotoxicity towards transferrin-overexpressing human non-small cell lung cancer cells. Aptamers are small synthetic single-stranded RNA or DNA oligonucleotides folded into specific shapes that make them capable of binding specific targets. Farokhzad reported that the use of A10 RNA aptamer conjugated to docetaxel-loaded nanoparticles significantly enhances in vitro cytotoxicity [1]. The same aptamer has been also used to prepare quantum dot-doxorubicin conjugates. Antibodies are currently the most exploited ligands for active targeting. These proteins have a typical shape, where the two arms are responsible for the selective interaction with the antigen. Antibodies can be used as immune-conjugates, when conjugated to a drug or nanoparticle, or naked. In the first case, their function is mainly to target a specific antigen overexpressed on cancer cells. Antibodies used for this purpose include those ones that bind to the human epidermal growth factor receptor 2, the epidermal growth factor receptor, the transferrin receptor and the prostate-specific membrane antigen [2]. Rapamycin-PLGA nanoparticle conjugated to EGFR antibody exhibited higher cellular uptake by human breast adenocarcinoma cells, with enhanced apoptotic activity. Loperamide-loaded human serum albumin nanoparticles conjugated to antibodies that specifically bind transferrin receptor successfully crossed the BBB and delivered the drug to the desired site. Naked antibodies or immune-conjugates can also be used in immunotherapy, which is a cancer treatment that aims at stimulating or restoring the immune system of the patient against cancer cells. Antibodies can act as markers for cancer cells to make them more vulnerable to the immune system response, or as inhibitors for immune checkpoint check

Conflict of Interest

None

References

1. Li B, Chau JFL, Wang X (2011) Bisphosphonates, specific inhibitors of osteoclast function and a class of drugs for osteoporosis therapy. J Cell Biochem US 112:1229-1242.
2. Kyttaris VC (2012) Kinase inhibitors: a new class of antirheumatic drugs. Drug Des Devel Ther UK 6: 245-250.
3. Weber MA (2001) Vasopeptidase inhibitors. Lancet EU 358: 1525-1532.
4.