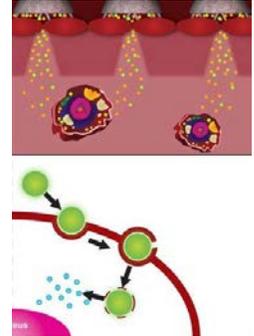


HOUSTON METHODIST INVENTION:

Sustained Delivery of Doxorubicin to Tumors

Invention

The invention provides an efficient and sustained release of doxorubicin in a tumor. The invention is a polymer linked to doxorubicin, packaged inside a porous particle. High local concentrations of doxorubicin can be achieved at the site of the tumor which avoids the toxic effects of the drug on other tissues. Other cancer drugs may be attached to the polymer for chemotherapy. The polymer-linked doxorubicin enters the tumor cells via vesicular transport system, and is released from the pH-sensitive polymer only in acidic environment of the lysosomes, circumventing the cell membrane efflux proteins that are known to cause drug resistance. Since Doxorubicin is only released inside the tumor cells this formulation reduces toxicity to non-tumor tissues and thus reduces the drug's side effects.



Background

Delivery of drugs to a disease site at appropriate concentrations remains a challenge, especially in cancer treatment. The majority of therapeutic drugs are systemically delivered at high concentrations to achieve desirable concentrations at the tumor. However, the excess drug causes toxicity to other organs and increases development of drug resistance by cancer cells. Traditional drug-delivery methods have not been very efficient at achieving sustained, high concentrations of the drug at the tumor, and are unable to effectively eliminate tumor-initiating cells.

Advantages

- This novel formulation inhibits breast cancer lung metastasis more efficiently than Doxil in vivo.
- Provides sustained-release delivery of a cancer drug to a tumor.
- Reduces systemic toxicity by increasing concentration of drug locally in the tumor.
- High local concentration and sustained release of drug may prevent cancer cells from developing drug resistance.
- May increase the therapeutic range of a drug without the related toxicity.
- May eliminate tumor-initiating cells.

For more information, contact the Office of Technology Transfer by e-mail at OTT@HoustonMethodist.org.



About Houston Methodist

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