Skysong Innovations
Advancing the Arizona State University Knowledge Enterprise

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Carbohydrate-Targeted Antitumor Agents

The bleomycins (BLMs) are well-known antineoplastic agents, clinically useful in the treatment of squamous cell carcinomas and malignant lymphomas. The carbohydrate moiety of BLM is also known to be highly tumor targeting. Methotrexate is a highly effective antitumor agent as well and is used to treat cancers of the skin, head and neck, lung and breast. While methotrexate is highly cytotoxic it has modest tumor cell selectivity, thus giving it an unfavorable therapeutic index. There are also tumors resistant to methotrexate.

Researchers at the Biodesign Institute of Arizona State University have developed specific BLM based saccharide compounds and conjugated them to cytotoxic antitumor agents such as methotrexate. The BLM saccharide compounds allow for the cytotoxic agent to be selectively delivered to tumor cells, and the unique uptake mechanism can circumvent resistance. These saccharide compounds have shown to be as efficient if not more efficient at targeting tumors than the natural BLM disaccharide moiety. Numerous highly specific analogues have also been produced.

These novel conjugated compounds with their high specificity for tumors offer great utility as tumor therapeutics with enhanced potency and efficacy.

Potential Applications

- Highly targeted cancer therapeutics

Benefits and Advantages

- Highly efficient tumor targeting
- Conjugation of cytotoxic agents increases therapeutic potential
- Potential to circumvent resistance to unconjugated drug

For more information about the inventor(s) and their research, please see Dr. Hecht's departmental webpage