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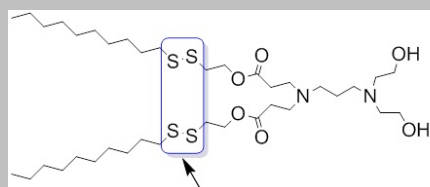
Available Technologies:

◆ T001877

Features and Applications:

- Nanocarriers for nucleic acid-based delivery
- Efficient, cost-effective synthetic methodology
- Traceless delivery method
- Clinical application for delivering DNA/RNAi therapeutics

Bioreducible Nanocarriers for Nucleic Acid Delivery



Bioreducible Linker

Lipids as delivery system

A series of novel bioreducible surfactants was generated. These probes successfully assemble with DNA/RNA in solution to form nano complexes for therapeutic nucleic acid delivery.

Researchers at Tufts University have developed a combinatorial library of cationic lipid-like materials (lipidoids) for intracellular DNA and RNA delivery. These compounds assemble with DNA and small/micro RNAs through electrostatic interactions with the nucleic acid backbone, and facilitate gene delivery to cells [1, 2].

The researchers have correlated the transfection efficiency of DNA and mRNA delivery into human cervical carcinoma cells (HeLa) with several lipidoid library members.

Intracellular delivery of DNA and mRNA in fibroblasts and different cancerous cell lines was also demonstrated, highlighting the power of this technique for clinical translation of DNA and RNA-based therapeutics.

The bioreducible nature of these lipidoids allow them to be efficiently cleaved in the highly reducing cellular environment. This rapid cleavage event allows for improved cytotoxicity and delivery of the siRNA therapeutic of interest, as compared to non-bioreducible lipidoids. These cleavable lipidoid formulations may provide a better immunogenicity profile, as compared to traditional transfection reagents.

These new lipidoid drug formulations may be beneficial for the development of nucleic acid-based cancer vaccines and chemotherapy. Other applications include new transfection reagents, which are more efficient than non-bioreducible counterparts.

[1] Sun et al. *Bioconjug Chem* (2012) 23, 135 - 140

[2] Wang et al. *ACS Synthetic Biol* (2012) in press

Summary

Cationic lipids have been demonstrated to be efficient nanocarriers for DNA/RNA therapeutics. Nucleic acid/lipidoid complexes readily form, generating a traceless delivery system to cells. These

new compounds have enhanced cytotoxic and immunogenic properties. As a new gene delivery vehicle, these compounds will redefine the therapeutic field with the clinical translation of DNA/RNA

as drug candidates.

An IP position is now available for licensing from Tufts University. Check out a full description of the technology at <http://techtransfer.tufts.edu/>

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