



TECHNOLOGY AVAILABLE FOR LICENSING

Self-Assembling Micelle-Like Nanoparticles for Systemic Gene Delivery

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Invention Details:

The invention describes a method to construct a nanoparticle for gene delivery. This is a safe, non-viral delivery system for gene therapy, which is simple to handle and less expensive than viral vectors. First, a cationic polymer, such as polyethyleneimine, is conjugated to the distal end of a phospholipid alkyl or acyl chain. This is mixed with a nucleic acid such as plasmid DNA, oligonucleotide or antisense oligonucleotide, RNA or a ribozyme. This produces nanometer sized complexes of polyethyleneimine/nucleic acid in a phospholipid monolayer envelope. Nanoparticles obtained this way are non-toxic and long-circulating in vivo.

Benefits of the Invention:

Prior art polyethylene/DNA complexes have not shown significant therapeutic efficacy, a detriment ascribable to their positive charge. The complexes according to the invention overcome this defect.

Advantages:

- Simple and reproducible one-step procedure
- High loading capacity (10-fold higher than values reported in literature)
- Increased stability

The Bottom Line:

The method of the invention produces a novel and effective construct for gene delivery and therapy. This new approach of using a chemical conjugate of phospholipids and polymer provides for the advancement of this therapeutic method into everyday medical practice.

For More Information:

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