

BACKGROUND

The field of drug delivery systems is an emerging field still presenting many challenges. There is a wide interest in developing an efficient and reliable system that is able to transport a biologically active material to a desired location, and then releases through a simple process. Various approaches have been explored with the aim of mitigating problems that arise with the use of such systems. Typically, these problems include nonspecific distribution in the body, poor solubility, diffusion inside the transport vessel or in the body, non-efficient drug release profile and nonspecific trigger mechanism.

Liposomes are the most common drug delivery systems used today as they are nontoxic, biodegradable and biocompatible. Furthermore, their nature enables them to be tailored made in terms of size, nature (hydrophobic or hydrophilic shell) and functionality. Another advantage associated with the use of liposomes is the ability to incorporate different substances within the inner void during or after (remote loading) the assembly process. The trigger mechanism can be a physical property such as pH or temperature. The trigger mechanism can also utilize a specific recognition property such as an antibody, an enzyme or a ligand.

TECHNOLOGY

The technology entails a redox-sensitive phospholipidic compound that could be used as a drug-delivery system. Based on the difference of electrical potential between different cell types, the system could be used in a remote manner to release biologically active material into target cells, such as cancer cells.

COMPETITIVE ADVANTAGES

- Biocompatible, biodegradable and nontoxic
- Capable of protecting their encapsulated drug from external environment
- Can be formulated in suspension, aerosol, semisolid and powder forms
- Can be administered through ocular pulmonary, nasal, oral, topical, IM and IV routes
- Increase the efficacy and reduce the toxicity of the drugs
- High stability
- Have the capability of flexibility to couple with site-specific ligands to achieve active targeting

APPLICATIONS

- Drug delivery system for anti-cancer treatment
- Cell imaging
- Nutrient transportation

PATENT STATUS

Title: Redox sensitive vesicles

US: 15,541,559 (07/2017)

EU: 16,739,701.7 (07/2017)

TECHNOLOGY DEVELOPMENTAL STAGE

- Pilot-scale being carried out
- *In vivo* to be demonstrated

BUSINESS OPPORTUNITY

Partnering/licensing opportunities

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