



A HYDROPHILIC REDOX-RESPONSIVE POLYMERIC MICELLE COMPRISING CHLORIN E6 FOR PHOTODYNAMIC THERAPY

Technology Description: The invention is related to the development of a polymeric micellar system for glutathione-mediated intracellular delivery of a photosensitizer, chlorin e6 (Ce6) by synthesizing an amphiphilic polymer, methoxy-poly(ethylene glycol)-poly(D,L-lactide)-disulfide-Ce6 (mPEG-PLA-S-S-Ce6), which self assembled in aqueous environment to form micelles. the nanocarrier system for faster drug release and enhanced therapeutic effect. The GSH-mediated intracellular drug delivery was studied against mouse mammary carcinoma cells (4 T1) and human alveolar adenocarcinoma cells (A549) by pretreatment of the cells with either buthionine sulfoximine (BSO) or, glutathione monoester (GSH-OEt) thus increasing or decreasing the GSH concentration in the cytoplasm.

Patent Status: Granted

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Proof-of-concept (PoC) available?
Yes

Current TRL Level: 3

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Key Features & Benefits:

- Micellar form of Ce6 improves solubility, and stability, and cellular absorption, and passive tumor targeted delivery of Ce6 reducing non-specific side-effects.
- mPEG-PLA-S-S-Ce6 polymeric micelles are a surprisingly effective redox-responsive system for Ce6-mediated photodynamic therapy

Potential Application& Industries:

- We would promote the application of this drug delivery system to pharmaceutical
- companies working in the development of nano formulations for cancer therapy.
- However, based on the interest of the pharmaceutical
- industry/customer on certain cancer and certain chemotherapeutic agent, our drug delivery
- system will be validated in other animal models, or advanced to the next level.

