



Temperature-Sensitive Lipid-Protein-Polymer Conjugates for Tailored Drug Delivery and Bioimaging: A Multifunctional Approach

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HIGHLIGHTS

- A novel protein-polymer bioconjugates comprising bovine serum albumin (BSA) and lipid-based thermoresponsive block copolymer.
- Smart drug delivery nanocarriers.

OPPORTUNITY

Researchers at University of Alberta have developed protein-polymer bioconjugates comprising bovine serum albumin (BSA) and a lipid-based thermoresponsive amphiphilic block copolymer. The synthesized bioconjugates demonstrated a well-defined structure, low cytotoxicity and excellent biocompatibility with various cell lines. These bioconjugates can self-assemble into vesicular compartments for co-delivery of glucose oxidase (GOx) and doxorubicin (DOX), exhibiting high drug loading capacity and exceptional antitumor activity through synergistic chemotherapy and starvation therapy. The lower critical solution temperature (LCST) of the bioconjugates was fine-tuned to around 40 °C. This temperature optimization enables targeted drug delivery to tumors, thereby enhancing the therapeutic efficacy of the bioconjugates. Furthermore, these bioconjugates display significant intracellular fluorescence intensity at 40 °C, indicating their potential application as fluorescent probes for cellular imaging.

COMPETITIVE ADVANTAGE

- Potential applications in drug delivery systems, biosensing and cellular imaging.

STATUS

- Pending.

INVENTORS

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MORE INFORMATION

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