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(57) Abstract :
[033] This invention relates to a novel dual pH- and thermo-responsive amphiphilic block copolymer drug delivery vehicle synthesized via RAFT polymerization using phenylalanine derivatives and N-vinylcaprolactam. The copolymer self-assembles into micellar nanostructures capable of encapsulating hydrophobic anticancer drugs such as Doxorubicin with high loading efficiency. The micelles exhibit controlled drug release triggered by acidic pH and elevated temperature conditions typical of tumor microenvironments, enabling targeted cancer therapy. In vitro studies demonstrate the biocompatibility of the polymer and enhanced cytotoxicity of the drug-loaded micelles against cancer cells under hyperthermic conditions, highlighting the potential of this system as an effective and safe drug delivery platform for cancer treatment. Accompanied Drawing [FIGS. 1-2]

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