



Synthesis, characterization, and in-vitro antitumor effect of functional group modulated pH-responsive hydrogel against breast cancer

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Abstract:

Hyaluronic acid (HA) is a natural linear polysaccharide having multiple acid and hydroxyl groups which makes it pH responsive hydrogel by chemical modification. In this present study describes the design and synthesis of pH responsive vitamin E-polyethylene glycol based hyaluronic acid hydrogel. The hydrogel loaded with doxorubicin (DOX) exhibited high loading capacity and the release amount of DOX ascended with pH value decreasing from 7.0 to 4.0. Our results suggested that 200nm core-shell hydrogel was formed which caused controlled release of drug under acidic conditions because deformation of hydrogel C-H/N-H group at acidic condition. The cytotoxicity assay demonstrated that DOX loaded VE-PEG-HA-CA hydrogel has much higher cytotoxicity compared to free DOX and better cell uptake due to the hydrogel effect. Drug loaded VE-PEG-HA-CA achieved 83 % regressions of tumor cells and DOX show only 75 % cell death in in vitro model.

Biography:

Arjama Mukherjee is a research scholar from University of Madras, Chennai, India. She is doing her PhD mainly on application of nanotechnology in cancer. She is M.Tech in Biotechnology and now is involved in the research field. Her work involves the synthesis of natural and non toxic nano materials which can be applied in drug delivery against cancer. She is also involved in the synthesis of hydrogel compound for tissue engineering.



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