

Doxorubicin nanomicelles : synthesis, solubility and anticancer activity

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Abstract:

Cancer is a leading cause of death worldwide. The chemotherapy is one of the essential choices in the treatment of cancer. However, it causes a lot of side effects. Therefore, the development of new strategy to deliver the chemotherapy specifically to cancer cells is in high desire. In this project, three different polymers based on polydiacetylene hydrophobic core were synthesized and micelles were developed with three hydrophilic heads (carboxyl, hydroxyl and tetramine). The CMC results showed successful formation of the micelles with a low CMC indicating the high stability of the formed micelles. Moreover, their vitreorelease profiles showed increase release of the loaded DOX in acidic pH in comparison to the physiological pH. The cytotoxicity results showed an improvement of the anticancer activity of the DOX loaded in the three micelles on HeLa cells in comparison to the free DOX, these results open the door for the development of new strategy in the cancer therapy.