

Polymer Chemistry

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Synthesis of diosgenin containing m-PEG-PCL nanoparticles: Anticancer, antimicrobial and drug delivery studies

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Diosgenin is a steroidal saponin from a therapeutic herb. Natural products have always played a highly significant and potential role in the drug discovery. Here, we developed a nanoparticle platform based on poly(ethylene glycol)-poly(caprolactone)-diosgenin (mPEG-PCL-DGN) conjugates for co-delivery of anticancer drugs. Firstly, to improve the solubility and bioavailability of DGN, the amphiphilic conjugates mPEG-PCL-DGN were made by linking DGN with PCL and mPEG. Then they self-assembled nanoparticles to deliver another anticancer drug imatinib mesylate (ITB) by a simple nanoprecipitation method. The obtained nanoparticles possessed the appropriate size, high drug loading efficiency of diosgenin and ITB. In this study, polymer-drug conjugates mPEG-PCL-DGN was synthesized based on PCL, mPEG, and diosgenin, in which diosgenin, PCL and mPEG were used as the hydrophobic and the hydrophilic segment, respectively. Then the mPEG-DGN self-assembled into a polymeric nanoparticle with linear PCL, mPEG, and diosgenin (Figure). The nanoparticles were developed as an important strategy for drug delivery due to their capabilities of enhancing drug solubility.

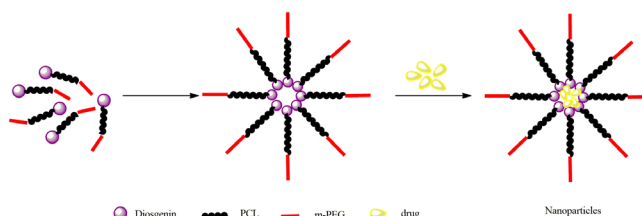


Illustration of mPEG-PCL-DGN co-delivery of ITB

Biography

Sevinc Ilkar Erdagi is pursuing her PhD in Kocaeli University, Turkey under supervision of Prof. Dr. Ufuk Yildiz. She is a Research Assistant in Kocaeli University for seven years. She studies Organic Chemistry and Polymer Chemistry especially in steroid chemistry and natural products.

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