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Nano multi arms biodegradable polymers for drug delivery

Hadi Salman Al-Lami
University of Basrah, Iraq

Novel triblock copolymers of poly(L-lactide)-poly(ethylene glycol)-sebacate-poly(ethylene glycol)-poly(L-lactide) were synthesized by Ring-Opening Polymerization of different ratio of L-lactide using Diazabicyclo-[5.4.0]-undec-7-ene as catalyst. These copolymers were fully characterized. They were used to prepare IPN's which had a Nano fibre characteristic as examined by Scanning Electron Microscopy. The swelling ratio, hydrolytic degradation and Insulin release studies were performed at three different pH. It was found that the swelling ratio and the time needed to degrade fibre IPN's increased with increasing PEG chain length. *In vitro* insulin release showed that the longer the PLA chain length the slower the release rate. Insulin release could be potentially controlled by PEG molecular weight, PLA content, pH, presence of Pluronic F-127 in the IPN's, crosslinking agent ratio, and the number of coated layers.

hadisalman54@yahoo.com