Self aggregates of biodegradable amphiphilic poly(hyeroxyethyl aspartamide-co-propyl aspartamide) grafted with poly(L-lactide)

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Amphiphilic graft copolymers composed of poly(hydroxyethyl aspartamide)-co-propyl aspartamide)(PHEA-PA) as the hydrophilic backbone and poly(l-lactide) as the hydrophobic side chain were synthesized by grafting l-lactide on PHEA-PA, and their nano-aggregates were prepared in aqueous solution for application of drug delivery. A detail procedure is as follows. 1 step : Polysuccinimide(PSI) was prepared by acid-catalyzed polycondensation of L-aspartic acid. 2 step : PHEA-PA was prepared by two-step aminolysis of hydroxyethylamine and propylamine to PSI. 3 step : PLA was grafted onto PHEA-PA backbone via a ring-opening polymerization of l-lactide in the presence of Sn(Oct)2. The chemical structures of prepared polymers were confirmed by 1H NMR and FT-IR. Spherical shape of (PHEA-PA)-g-PLA aggregates was observed by scanning electron microscopy (SEM). The mean particle size and distribution were investigated by dynamic light scattering (DLS).