Synthesis and characterization of poly{DL-lactide-b-[oligo(ethylene glycol) methyl ether(meth)acrylate)]} block copolymers. Micellization and encapsulation of hydrophobic drug model compounds

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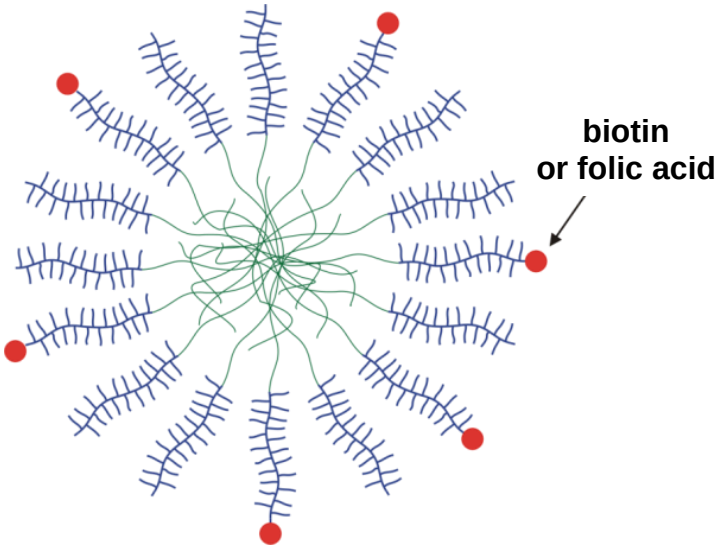
A series of well-defined poly{DL-lactide-b-[oligo(ethylene glycol) methyl ether (meth)acrylate)]} (PDLLA-b-POEG[M]A) functional amphiphilic diblock copolymers was synthesized by employing a multistep procedure involving: (a) ring-opening polymerization of DL-lactide using n-decanol and stannous octoate as the initiating system, (b) esterification reaction of the PDLLA hydroxyl end groups with 2-bromoisobutyryl bromide, (c) atom transfer radical polymerization of OEG(M)A with the newly created bromoisobutyryl initiating site, and (d) incorporation of biotin or folic acid at the POEGA chain ends using click chemistry. The products were characterized by NMR spectroscopy and SEC analysis. The aggregation behavior of the synthesized block copolymers was investigated by dynamic light scattering at 25^{o}C in aqueous solutions. The hydrophobic drug model compounds Nile red and pyrene were efficiently incorporated into the copolymer aggregates in aqueous solutions. High partition coefficient values were determined by fluorescence spectroscopy.



References:

1. N. Karanikolopoulos, I. Choinopoulos, M. Pitsikalis *J. Polym Sci*. **58,** 1582, (2020)