

Membrane properties of polymer-lipid hybridsome using amphiphilic poly(asparagines)

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We prepared polymer-lipid hybridsomes of saturated lecithin with poly(asparagines) grafted with alkyl chains (PAsn-Cn). The inclusion of polymer lowered the membrane rigidity of polymer hybridized liposome (PHL). Membrane fluidity of PHL using PAsn-C18 and PAsn-C22 decreased by the increase of polymer concentration due to the tighter packing of lipid components. The membrane rigidity of vesicles increased by increasing the alkyl chain length at the same polymer concentration. DSC results confirmed that the amphiphilic polymers (PAsn-Cn) were incorporated well with PC liposomes without making the separated polymer aggregates. The polymer-lipid mixed micelles were expected to form more by increase of polymer concentration which grafted with long alkyl chains. PAsn-C8 was expected to form polymer-lipid mixed micelles easily even at a low polymer concentration due to its high hydrophilicity. The phase transition temperature of liposome was changed by the inclusion of amphiphilic polymers, and it was affected by the polymer concentration and alkyl chain length of polymer.