

**Stable Vesicle Assemblies on Surfaces of Hydrogel Nanoparticles Formed from a Polysaccharide Modified with Lipid Moieties**

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nanoparticle-supported lipid assemblies have been highlighted for biology and medicine because of their versatility for sensing, mimicking cellular membranes, and delivering drugs. A lipophilic moiety of 1, 2-ditetradecanoyl -sn -glycero -3-phosphoethanolamine(DMPE) and a UV-crosslinkable agent of methacrylic anhydride (MA) were covalently attached to hyaluronic acid(HA) and the formation of hydrogel nanoparticles via a surfactant-free inverse emulsion mechanism was demonstrated. The lipophilic DMPE moiety enables the formation of a spherical morphology in oily media and allows for the stable assembly of lipid bilayers bearing amphiphiles on HA nano-hydrogel surfaces as anchoring groups. A conjugated oligoelectrolyte, a model amphiphile, was incorporated into the nano-hydrogel-supported lipid bilayers, resulting in the formation of stable multilamellar, peripheral vesicular structures due to the similarity in the chemical structures of DMPE and assembled lipid molecules. Acknowledgments: This work was funded by the Korea Research Foundation (2013R1A1A2058816) and the Ministry of Science, ICT and Future Planning(2014M2B2A4031389).