

Self-assembled Nanoparticles Made of Fucan

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Amphiphilic polymers can self-assemble in water due to hydrophilic and hydrophobic interactions, forming nanoparticles (NPs) with unique physicochemical characteristics and thermodynamic stability. A non toxic sulfated Fucan, extracted from *Spatoglossum schroederi* was chemically modified by the grafting of Hexadecylamine (C16) to the polymer hydrophilic backbone. The resulting modified material (Fucan-C16) formed nanosized particles which were characterized by ¹H NMR to assess the substitution degree of the hydrophobic chains, fluorescence spectroscopy to determine the critical aggregation concentration (cac), cryo-field emission scanning electron microscopy (Cryo-FESEM) to evaluate the shape and size of the NPs, and dynamic light scattering (DLS) to verify the size distribution. The (cac) of Fucan-C16 NPs ranged between 0.05 and 0.03mg/mL. Cryo-FESEM revealed that Fucan-C16 formed spherical macromolecular particles with diameters between 120 and 180 nm, which were confirmed by DLS. In addition, the size of the NPs were not affected by the concentration of the polymer or by the variation of the pH. The size of nanoparticles increases with increasing its concentration in solution.

Keyword: Nanoparticles, Fucan, Amphiphilic polymers.

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