

Synthesis and characterisation of chitosan nanoparticle as a potential delivery carrier

ABSTRACT

Chitosan is a biodegradable, non-toxic polysaccharide that is extensively studied as a biocompatible vector for gene and drug delivery. However, the fabrication of chitosan nanoparticle (CNP) is usually encountered with a wide size distribution and poor particle stability, which unfortunately limits their role for certain biological applications. This study reports the synthesis and characterisation of CNPs under optimised conditions. The CNPs were synthesised via ionic gelation process utilizing tripolyphosphate (TPP) as a cross-linking agent. The particle size and morphology of samples were subsequently evaluated using dynamic light scattering (DLS), electron microscopy and Fourier-transform infrared spectroscopy (FTIR). Findings arising from this study showed the optimised nanoparticles exhibited spherical shaped CNPs with a size range from 4 to 25nm which lays the foundation for further applications.

Keyword: Chitosan nanoparticles; Dynamic light scattering; Fourier-transform infrared spectroscopy; Transmission electron microscope