

Surfactant Mediated Synthesis of Polyhydroxybutyrate (PHB) Nanoparticles for Sustained Drug Delivery †

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Abstract: Polyhydroxyalkanoates are produced by bacterial fermentation that contains ester as their functional group. Polymeric substances derived from living organisms are captivating owing to the fact of their adaptability, biocompatibility, and biodegradability. The main objective of this study is to develop polymeric nanoparticles through the nanoprecipitation method using the PHA extracted from *Pseudomonas aeruginosa*. In this study, PHA extracted was characterized and determined as Polyhydroxybutyrate. The PHA was further used to produce nanoparticles by nanoprecipitation method using Dichloromethane as a solvent and subjected to various characterizations such as Ultraviolet-Visible spectroscopy (UV-Vis), Fourier Infra-Red spectroscopy (FTIR), Field Emission Scanning Electron microscopy (FeSEM) and further tested for sustained drug release. Nanoparticles prepared by the nanoprecipitation method had a size with invariable dissemination. Curcumin loaded PHA nanoparticles displayed a competent antibacterial effect against *Bacillus subtilis*. A controlled drug release was exhibited.

Keywords: PHA; Polyhydroxybutyrate; *Bacillus subtilis*.

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Conflicts of Interest

The authors declare no conflict of interest.