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# NATURAL POLYMER BASED NANOPARTICLES FOR SUSTAINED DRUG DELIVERY: PREPARATION AND CHARACTERIZATION

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**ABSTRACT**

Nanoparticles are solid, colloidal carriers consisting of macromolecular substances that vary in size from 10 nm to 1000 nm. Natural Polymer based nanoparticles have been attention due to their stability and ease of surface modification, and site-specific drug targeting. Natural polymers are biodegradable, biocompatible and nontoxic in nature. Due to their small size, can permeate through the endothelium in inflammatory sites, epithelium, cancers cell, or penetrate microcapillaries. In general, the nanosize of these particles allows for efficient uptake by a variety of cell types and selective drug entrapment at target site. These systems in general can be used to provide targeted (cellular or tissue) delivery of bioactive compounds, improve bioavailability, and sustain release of drugs. The formulated nanoparticles were characterized by, drug entrapment efficiency (by the use of U.V. Spectrophotometer), particle size (by Malvern Zetasizer), thermal characteristics (Differential Scanning calorimetric), functional group detection (by FTIR) and surface morphology analysis (Field Emission Spectrophotometer). Fourier Transform infrared (FTIR) spectroscopy result stated that no polymer and drug interaction. DSC results revealed that in the formulated nanoparticles, the drug was present in the amorphous phase and may have been homogeneously dispersed in the polymer matrix. In vitro drug release study of formulations showed sustained release. The drug release was explained by kinetic model.

**Key words:** *Nanoparticles, Natural Polymer, biodegradable, characterization, Drug Delivery.*

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