

NS.SCI.14

CHARACTERIZATION OF DOXORUBICIN LOADED CHITOSAN NANOPARTICLES

**K. A. N. P. Katuwavila^{1,2}, A. D. L. C. Perera¹, V. Karunaratne^{1,2},
D. N. Karunaratne¹**

¹*Department of Chemistry, Faculty of Science, University of Peradeniya*
²*Sri Lanka Institute of Nanotechnology, Biyagama EPZ, Walgama, Malwana*

The anthracycline drug doxorubicin extensively used in cancer chemotherapy produces harmful side effects such as cardiotoxicity. Chitosan polymer is synthesized from the nitrogenous polysaccharide chitin. Chitosan nanoparticles play an important role as drug delivery carriers because of their better stability, biocompatibility and mild preparation method. Our aim was to encapsulate doxorubicin successfully in chitosan nanoparticles which would help minimize side effects of the drug.

The preparation of doxorubicin loaded chitosan nanoparticles was carried out by a two-step method i.e. oil in water emulsion and ionic gelation of chitosan with sodium tripolyphosphate. The particle size distribution and zeta potential values were measured in the suspension state in Zetasizer. Further characterization was accomplished by Fourier Transform Infrared Spectroscopy and Scanning Electron Microscopy images. For better stability the nanoparticles were freeze dried until use.

An average particle size of 20 nm was observed. The percentage encapsulation efficiency of the drug was determined by a centrifugation process showing upto 80% encapsulation. The freeze drying technique was carried out for better stability of nanoparticles.

Funding: University of Peradeniya through HETC Window 3 Research Fellowship.