Chitosan based Nano-Carrier System for Controlled Release of Ascorbic Acid

M.A.S.K. Menikarachchi, N. Karunaratne and V. Karunaratne

Department of Chemistry, Faculty of Science, University of Peradeniya

There is an increasing interest in the development of new delivery systems for the controlled release of drugs and bioactive agents. Among these delivery systems, encapsulation of the drugs using a biodegradable matrix shows a promising pathway for the enhancement of the bioavailability of the drugs.

The aim of the present study was to produce a chitosan-based nano-carrier system and check the release properties of the entrapped drug comparatively to the release of the free drug, to ensure whether there is a controlled release property in the nano-carrier system.

Chitosan is a non-toxic, biodegradable and biocompatible polymer with interesting biological and chemical properties. Ascorbic acid (Vitamin C) was used as a model drug for the process.

Ascorbic acid trapped liposomes were coated with chitosan, with the aid of Tween 80 and sodium sulphate. The chemical structure was analyzed by FTIR and controlled release of ascorbic acid from encapsulated particles over seven hours shows a distinguishable enhancement comparable to free ascorbic acid release.

Financial assistance by the National Science Foundation, Research Grant RG/2010/NANO/04 is acknowledged.