Journalof Pharmaceutical Sciences andEmergingDrugs

Short Communication

A SCITECHNOL JOURNAL

Nano composite sponges for oral delivery

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Abstract:

Dr. Giovanna Lollo is Assistant Professor at the Faculty of Pharmacy, University Claude Bernard Lyon 1 (France). In 2012 she received Ph.D. in Pharmaceutical Technology at the University of Santiago de Compostela (Spain). Then, she joined the MINT laboratory at University of Angers (France) where she worked as postdoc developing novel nano-immuno-chemotherapeutic approaches to defeat cancers. Currently, her research is directed towards the design of novel nanosystems to cross biological barriers reaching pathological sites without compromising healthy tissues, with applications in oncology and autoimmune diseases. She has authored more than 30 peer-reviewed articles and has issued 3 patents (one licenced).

Biography:

Oral delivery is considered the favoured route of administration for both local and systemic delivery of active molecules (1). Formulations of drugs in lipid-based delivery systems as nanoemulsions (NE) have drawn increasing attention in the last decade for their great potential to improve oral delivery of poorly water-soluble drugs (2). In this work a rational design to obtain novel NE has been carried out. Stability in simulated gastric fluid (SGF) and simulated intestinal fluid in fasted state (FaSSIF-V2), and mucopenetratign properties of NEs were studies. Moreover, we reported the optimization of drying processes to improve systems stability. In view of prolonging drug intestinal residence time NE were embedded in a mucoadhesive chitosan (CH) sponge to obtain a nanocomposite. Chitosan, a high mucoadhesive polysaccharide, biocompatible and biodegradable has been selected to its ability to adhere to the mucosal epithelium. The unique physicochemical, structural and biopharmaceutical aspects associated to CH-loaded NE nanocomposites for improving oral drug delivery have been studied (3). The nanocomposite was successfully obtained and using microscopy techniques (SEM and optical microscope) we were able to characterize the structure of the system. Lastly, the nanocomposite oral administration to mice proved the effectiveness in increasing the NE intestinal residence time. Overall, the approach here presented provide a template for developing nanoemulsion-based nanocomposite intended for oral delivery of drugs.