

Development and characterisation study of liposomes-encapsulated piroxicam.

ABSTRACT

The objective of present work was to develop a novel liposomes-based drug delivery system for a lipophilic non-steroidal anti-inflammatory drug, piroxicam. The system was prepared using proliposomes method and optimised for different preparation parameters including type of proliposomes, concentration of drug, duration of hydration and type of particle size reduction treatment used. All prepared liposomal samples were extensively characterized for their drug-entrapment and size profile using various in-vitro techniques. Present work showed that the most optimum formulation (Pro-lipoTM Duo; 12mg piroxicam per gram Pro-lipoTM; 10 hours hydration time) produced highest amount of actual drug been entrapped in liposomes (800.4 mg/g Pro-lipoTM) with a satisfactory entrapment efficiency of 15.36%. This formulation had also produced liposomal samples with a homogenous (polydispersity index = 0.45) and small particle size (359.95nm). Extrusion technique was found to cause significant reduction in drug-entrapment and size profile of drug-loaded liposomes. A 4-weeks storage study showed that drug-entrapment and size profile of liposomal samples were stable in both refrigerated and room temperature. Electron microscopy revealed that prepared liposomal samples were spherical-shaped and showed concentric lamellae. In conclusion, present work successfully demonstrated a simple, reproducible and practical method of preparation for liposomes-encapsulated piroxicam.

Keyword: Proliposomes; Liposomes; Piroxicam; Encapsulation; Particle size; Transmission electron microscopy.