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Formulation and *in vitro* characterization of amphotericin B

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Background and Aims: Amphotericin B (AmB) is given by intravenous infusion in the treatment of severe systemic fungal infections such as aspergillosis. The main side effect of this polyene compound is nephrotoxicity which could be reduced by lipid-based formulations. We prepared and evaluated the niosomal formulations of this drug because surfactants are more stable than phospholipids, the main constituent of liposomes, against oxidation and heat.
Methods: Positively charged niosomes composed of sorbitan esters (Spans), polyxylated sorbitan esters (Tweens) and cetyltrimethylammoniumbromide (CTAB) were used for niosomes preparation. Encapsulation efficiency percent (EE%) of AmB was evaluated by size exclusion chromatography using Sepharose G-50. Particle size analysis was carried out by laser light scattering technique. Stability of vesicular systems during 6 months storage at 4-8 C and AmB in vitro release profile study were also carried out.
Results: Due to lipophilicity nature of AmB, more than 85% of the drug was encapsulated in long alkyl chain surfactants which were Span/Tween 40 and 60. Release profiles of AmB depicted slow and continuous delivery. The mean volume diameter of the selected niosomes didn't change during stability evaluation period. Vesicles were more as round and multi-lamellar vesicles.
Conclusions: This study showed niosomal formulations could be used for encapsulation and slow release of AmB, but more efforts should be done for size reduction of the vesicles which make them capable for i.v. injection in animal models.

Keywords: Niosome; Amphothericin B; Size exclusion chromatography