DEVELOPMENT OF LIPOSOMAL FORMULATIONS OF CEFUROXIME

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ABSTRACT

Liposomes are spherical vesicles that consist of natural or artificial lipids, which have been increasingly used as drug carriers over the past years, as a result of their very good biocompatibility. The present study questioned the ability of an antiobiotic drug, cefuroxime, to be encapsulated and retained in liposomes. Various types of liposomes with different lipid membrane compositions were prepared, physicochemically characterized and studied for cefuroxime release kinetics. The experimental results revealed that cefuroxime can be encapsulated in liposomes at high amounts by the dehydration/reconstitution vesicle (DRV) method, while the drug encapsulation efficiency was affected by the lipid membrane composition. Regarding the drug release experiments, results revealed that all lipid compositions had about the same release pattern, which was significantly slower (as anticipated) compared to the free antibiotic (control). All liposome compositions also showed strong in vitro antibacterial effect compared to free antibiotic cefuroxime, towards Staphylococcus epidermidis bacterial strains. Cefuroxime is currently used in the clinic in patients during and after cataract surgery, for prevention of post- operative endophthalmitis. The final aim of this study is to identify optimal formulations of antibiotics (single or combinations) with prolonged antibacterial action following intracameral administration.

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