Archives of Pharmacy Practice
Abstract Conference Proceedings
2nd Asia Pacific Pharmacy Education (PharmED) Workshop
ISSN 2045-080X Vol. 3, Issue 1, 2012

AO-007

FORMULATION AND EVALUATION OF ETHOSOMES FOR ANTIVIRAL DRUG DELIVERY

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ABSTRACT

Acyclovir, a synthetic purine nucleoside analog derived from guanine, is one of the most effective and selective antiviral drugs. Acyclovir shows an antiviral effect on Herpes simplex virus HSV-1, HSV-2 and *Varicella Zoster* virus through interfering with DNA synthesis and inhibiting viral replication [1]. Unfortunately, its absolute oral bioavailability is considerably poor (about 15–30%) because of its low water-solubility (about 0.2%, 25ºC) and short half-life (about 2.5 h) [2]. Therefore, Acyclovir must be taken in an oral dose of 200 mg five times daily, which cause compliance problems to patients. Accordingly, it would be advantageous to have a composition that is effective in the topical treatment of viral infections and which contains a minimum amount of a potent antiviral agent. Such a combination would avoid or minimize the toxic side effects often associated with antiviral agents. Therefore the objective of the present study was to prepare ethosomes containing acyclovir with ultimate aim of providing longer residence in skin. Ethosomes of Acyclovir were prepared successfully by cold method of preparing ethosomes. Various formulations of ethosomes were prepared by using different percentage of ethanol and phospholipids. These formulations then were evaluated for vesicle size, entrapment efficiency, and diffusion. The study confirmed that ethanol and phospholipids concentration have positive effect on entrapment and diffusion. From the results it was observed that the vesicle size decreased with increase in ethanol concentration. Probably, ethanol causes a modification in net charge of the system and confers it some degree of steric stabilization that may lead to decrease in mean vesicle size. The diffusion profile of various formulations is shown in fig.1. The optimized formula of ethosomes showed good stability.