SHORT COMMUNICATION

FORMULATION AND EVALUATION OF LANSOPRAZOLE NIOSOME

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ABSTRACT

The niosomes formulation has got various advantages over conventional dosage forms; these stay in the blood for longer time then conventional and can thus greatly improve the therapeutic effect of drug. In many diseases (e.g. cancer) a considerable therapeutic advantage could be gained if drugs were delivered in selective and controlled manner to their target sites. The noisome are prepared by reverse phase evaporation method using a homogenizers. Non-ionic surfactant based vesicles used as vesicles for drug formulation have been found to reduce the systemic toxicity of many drugs. Lansoprazole was selected as candidate drug, it is antacid and antiulcer agents. Niosomes are characterized for its size rang, entrapment efficiency and in-vitro release of drug. For release study the phosphate buffer saline pH 8.6 was used and the samples were assayed by UV.

Key words: *Niosomes; controlled release; target site; lansoprazole.*

INTRODUCTION

Niosome are non-ionic surfactant based multilameller or unilameller vesicles in which an aqueous solution of solute is entirely enclosed by a membrane resulted from the organization of surfactant macromolecules as bilayers. Niosome can entrap both hydrophilic and lipophilic drugs, either in aqueous layer or in vesicular membrane, which is lipoidal in nature. Noisome are reported to attain and retain better stability than liposomes. They can prolong the circulation of the entrapped drugs because of the presence of nonionic surfactant here they posses better intrinsic targeting potential and propensity.[1,2 ,3]Emphasis has been placed on slow release of drug, resulting into controlled activity, reduced toxicity, targeting and modification of distribution profile of drugs as aims of vesicular system development.Lansoprazole is a white crystalline powder ,freely soluble in ethanol and methanol slightly soluble in acetone and very less soluble in water. The aim is to prepare lansoprazole noisomes which are effectively used in the treatment of ulcerative colitis inflammatory bowel syndrome,gastric, duodenal and peptic ulcer with low toxicity and biocompatible form.[3,4]

EXPERIMENTAL

Lansoprazole was obtained by Hetro lab .Hydrabad , span-60 and sodium lauryl sulphate was obtained from Swiss medicare Ltd.Shriganganagr, Rajasthan. all reagents were of analytical and pharmaceutical grade.

Preparation and evaluation of lansoprazole niosomes

The method used in preparation of noisome was a modification of reverse phase evaporation technique. In this span-60 and cholesterol (1:1) were dissolved in a mixture of diethyl ether

chloroform (1:0:25); 5 ml of aqueous phase containing lansoprazole (4mg/ml)was added to this and the resulting two phases was homogenizer at 4-5°C for 3 min. and 800 rpm. The resultant clear gel was again homogenized for 2 min. with addition of 1ml of phosphate buffer saline. The suspension was then heated on a water bath at 60oC for 10 min.[3]

Table-1 Partical Size of noisome

Size range	% Niosomes
0.01-0.5	32-40
0.1-0.5	35-41
0.5-1.0	11-20
>1.0	4-8

Table-2 %Of entrapment efficiency

Niosome type	Initial Drug (mg)	Drug after lysis	%Entrapment Efficiency
Niosome with span-60	4.623	4.01	57.21

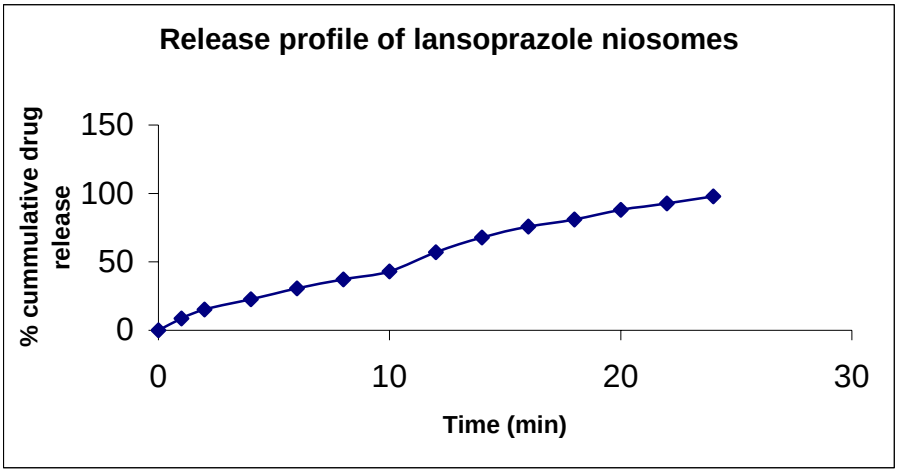

Fig.-1 Release profile of lansoprazole niosomes

Determination of partical size

Lansoprazole niosome were determined by light microscopy method.

Entrapment of partical size

After preparing niosome dispersion untrapped drug is separated by centrifugation method. The drug remaining entrapped in niosome[3] is determined by complete vesicle disruption using 50% n-propanol and was calculated as-

$$\text{Entrapment efficiency} = \frac{\text{Amount entrapped}}{\text{Total amount added}}$$

In-vitro release study

A study was done on the release pattern of the niosome formulation. 1ml niosome suspention was pipetted into a dialysis bag , which was previously soaked and washed several times with distilled water. This was placed 25 ml of phosphate buffer saline pH 8.6 and kept with constant agitation on a magnetic stirrer, maintained a temp. of 37oC,5 ml of sample were withdrawn periodically and after each sample same volume of medium was replaced. Then sample were assayed spectrophotometrically at 306 nm using medium as blank.[6]

RESULTS AND DISCUSSION

From the present study it is concluded that lansoprazole niosomes were prepare by reverse phase evaporation method may lead to the production of spherical stable uniform vesicles with excellent encapsulation efficiency as given in table no.02. The Partical Size of noisome as given in table no.01 and release profile of the niosomes as given in Figure-1.

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