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Formulation and Evalutaion of Ethosomal Formulation of Tinospora Cordifolia

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Abstract

Tinospora cordifolia is exhibiting anti-infective and anti-allergic properties. The bioavailability of Tinospora cordifolia is found to be very less because of its poor solubility. Particle size reduction will improve the drug solubility and bioavailability. Hence in this study ethosomal formulation was developed for Tinospora cordifoolia. The main Objective is to prepare vesicular delivery system for Tinospora cordifolia in order to achieve Topical and Transdermal drug delivery. Ethosomes were prepared by by hot method. The obtained ethosomes were observed under Trinocular microscope. The presence of lamellar structures confirms the formation of ethosomes.

Keywords: Tinospora cordifolia; Entrapment efficiency; Loading capacity

Introduction

T. cordifolia (Guduchi) is an available and well known herb all over the world. It is traditionally used for various ailments like fever, vomiting, diabetes, jaundice, anaemia, polyuria and skin diseases etc. It is indicated as (Medhyarasayana) a brain tonic, digestive, appetite stimulant and carminative for digestive system. It has potent rejuvenative neuroprotective, hypoglycemic, immuno modulatory , anti inflammatory effect. T. cordifolia is a rich source of alkaloids, furano diterpenoids, clerodane norditerpenoids, sesquiterpenoids, phenolics, lignans, sterols, aliphatic compounds, polysaccharides, essential oil and fatty acids. The alkaloids (e.g. berberine), bitter compounds (tinosporin, tinosporic acid and tinosporol) and lipids have been found to exhibit medicinal effects. Tinospora has active principles in stem which can be used for treaing allergic rhinitis but the bioavailability is quite low through oral route .Ethosomal formulation is opted to increase the bioavailability and therapeutic. Thus Transdermal drug delivery system is being used to formulate the ethosomal gel for easy penetration of Tinospora into the body and to increase its availability in the body [1,2].

The main Objective is to prepare vesicular delivery system in order to achieve Topical and Transdermal drug delivery systems to get better Therapeutic and Pharmacological action. The objective of this work is to prepare and evaluate ethosomal formulation of Tinospora cordifolia [3,4].

Materials and Method

Tinospora method of extraction

The Organic extract was prepared by soxhlet extraction method . A thimble was prepared by using 0.5 mm Whatman No. 1 filter paper. About 100 gm of powdered material was uniformly packed into a thimble and run in soxhlet extractor. It was exhaustible extracted with ethanol and methanol & (Merck) for the period of about 48 hours or 22 cycles or till the solvent in the siphon tube of extractor become colourless. After that extracts were filtered with the help of filter paper (Whatman No. 1) and solvent was evaporated in a rotary evaporator to get the syrupy consistency, then after the extract was kept in refrigerator at 4 °C [5,6].

Preparation of ethosomes containing Tinospora

In brief the lecithin (1-4% w/v) was taken in a small round bottom flask and solubilized with ethanol (10-50% v/v) containing drug under mixing with a magnetic stirrer. The round bottom flask used was covered to avoid ethanol evaporation. Distilled water was added slowly with continuous stirring to get the ethosomal colloidal suspensions. The temperature was maintained around 40°c as hot method is being followed for the formulation of ethosomes. The final suspension of ethosomes was kept at room temperature for 30 min under continuous stirring. Formulations were stored in the refrigerator and evaluated for vesicle size, vesicular shape, surface morphology, entrapment efficiency, in vitro drug permeation study and stability study [7,8].

Evaluation of the prepared ethosomes

Optical microscopy

Morphology was determined for all the 5 formulations using optical microscopy (S-3700N, Hitachi, Japan). The photo micrographic pictures of the preparation was obtained from the microscope by using a digital SLR camera [9,10].

Scanning electron microscopy

Scanning electron microscopy (SEM) is based on the incidence of a beam of accelerated electrons on the sample. These accelerated electrons interact with the sample, exciting its atoms which emit secondary electrons. According to the angle between the primary beam and the surface of the sample, it is possible to detect and analyze the surface topography [11].

Conclusion

The Tinospora cordifolia extract loaded ethosomal formulation was successfully prepared by loading phospholipid.The study confirmed that ethosomes are very promising carrier for the transdermal delivery

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of Tinospora cordifolia. Presence of multi lamellar, Unilamellar structures confirms the formation of ethosomes .The study revealed that this ethosomal formulation containing Tinospora Cordifolia extract has been considered as a possible novel vesicular carrier for the herbal extract.

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