Formulation of Rivastigmine Niosomes for Alzheimer Disease

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Abstract

Introduction: Alzheimer is a brain dysfunctional disease which could destroy the cognition and learning capabilities of the patient. Rivastigmine is an acetylcholine esterase inhibitor which can improve brain function in both Alzheimer and Parkinson's diseases. Hereby, we prepared niosomal formulations of rivastigmine for better penetration of this drug to brain**.**

Methods and Results: Sorbitan esters (Span 20, 40, 60 and 80), their water-soluble derivatives (Tween 20, 40, 60 and 80) and cholesterol were used for preparation of niosomes by film hydration method. Deionized water was used as hydration medium. Volume diameter, drug release profile, rivastigmine encapsulation efficiency and vesicular stability were evaluated. All used surfactant combinations formed round and tubular multilamellar vesicles (MLVs). Single mode size distribution, high encapsulation efficiency (more than 70%), good stability of vesicles depicted as unchanged size and finally, diffusion-based release profiles were shown for many of niosomal formulations.

Conclusions: Incorporation of rivastigmine into bilayer assemblies of niosomes compromises a good candidate for new drug delivery system which further studied in animal models will prove or reject its applicability in human.

Key words: Rivastigmine, Sorbitan esters, Niosomes, Stability, Drug delivery