

Liposome-Based Vehicles for Topical Delivery

PAUL S. USTER *Liposome Technology, Inc., Menlo Park, California*

I. INTRODUCTION

Liposomes are microscopic vesicles consisting of amphipathic lipids arranged in one or more concentric bilayers. These thermodynamically stable, lamellar structures form spontaneously when lipid is brought into contact with an aqueous phase. Unlike micelles, emulsions, and microemulsions, liposomes have an entrapped, discontinuous aqueous phase separated by 4-nm thick, bilayered lamellae from the continuous aqueous phase. Liposomes were developed originally to model biological membrane functions such as transport phenomena (1). However, it was soon recognized that the phenomenon of spontaneous compartmentation might be used to improve the therapeutic index of drugs by targeting active ingredient to the appropriate site of action and modulating drug release from the vehicle.

Because liposomes are a new vehicle to the pharmaceutical industry, the scope of this review will be to introduce the concept of liposomes, discuss some aspects of formulating a topical product with liposomes, and review the literature on liposome-based topical delivery systems.

II. "LIPOSOMOLOGY"

Liposome preparations can be distinguished according to size and number of lamellae, lipid composition, the encapsulation volume, and the percentage entrapment (Table 1).