Enhanced transdermal delivery of salbutamol sulfate via ethosomes.

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Abstract

The main objective of the present work was to compare the transdermal delivery of salbutamol sulfate (SS), a hydrophilic drug used as a bronchodilator, from ethosomes versus classic liposomes, containing different cholesterol and dicetylphosphate concentrations. All the systems were characterized for shape, particle size, entrapment efficiency percentage, by image analysis optical microscopy or transmission electron microscopy, laser diffraction and ultracentrifugation, respectively. In-vitro drug permeation via a synthetic semi-permeable membrane or a newly born mice skin were carried out in Franz diffusion cells. The selected systems were incorporated into pluronic F-127 gels and evaluated for both drug permeation and mice skin deposition. In all systems, the presence of spherical-shaped vesicles was predominant. The vesicle size was significantly decreased ($P<0.05$) by decreasing cholesterol concentration and increasing dicetylphosphate and ethanol concentrations. The entrapment efficiency percentage was significantly increased ($P<0.05$) by increasing cholesterol, dicetylphosphate and ethanol concentrations. In-vitro permeation studies of the prepared gels containing the selected vesicles showed that ethosomal systems were much more efficient at delivering (SS) into mice skin in terms of quantity and depth, than liposomes, aqueous or hydroalcoholic solutions.

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