Formulation and in vitro characterization of glycyrrhizin niosomes

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Abstract: Glycyrrhizin (Gly) have anti-inflammatory, depigmentation, anti-viral and anti-histaminic properties in topical delivery. It has also been used as a penetration enhancer agent in NSAID topical dosage forms. In the present study, we prepared and evaluated the properties of niosomal formulations. Spans (20, 40, 60 and 80) and Tweens (20, 40, 60 and 80) with different cholesterol molar ratios were used for vesicle preparation. A HPLC method was developed for Gly determination. Physical stability of the vesicles during 4 months was evaluated by microscopic observation and size analysis. Release of Gly was studied using all-glass Franz diffusion cells. ST 20 and 80 didn’t form stable formulation but ST 40 and 60 formed round and stable niosomes due to gel state nature of Span 40 and 60. The release of the Gly was best fitted by diffusion-based models such as Higuchi or Bakers-Lonsdale equations. Encapsulation efficiencies were more than 50% which was increased following cholesterol content increment, non-significantly. Prepared niosomes had high physical stability and slow release capability for Gly. Therefore these vesicles could be used for topical delivery of Gly.

Keyword: Nisomes, Glycyrrhizin, Spans, Tweens