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Drug diffusion and permeation studies of Genistein containing Lyotropic liquid crystals

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Genistein (4,5,7-trihydroxyisoflavone) is one of the most abundant isoflavone in soybeans. It is also called a phytoestrogen because structurally similar to the human hormone, 17β-estradiol. Genistein is found to be a potent tyrosine kinase inhibitor, and has been extensively used in the prevention and treatment of many diseases and disorders, including cancer, cardiovascular diseases, osteoporosis and postmenopausal symptoms. Genistein has poor water solubility which is a real problem in terms of formulation. We developed a potential dermally used lyotropic liquid crystal (LLC) with the Genistein. The aim of this work was to investigate the Genistein diffusion and permeation. These systems are usually formed from water and one or two surfactants and possibly co-surfactants and oils. LLCs are characterized by the properties of both liquids and solids. The main advantages of these formulations that show similarity with the lipid bilayer of stratum corneum, thermodynamically stable, exhibit good penetration and they may facilitate the progressive diffusion of biologically active substances into the skin. Therefore we measured the Genistein release and diffusion with a Franz diffusion cell through synthetic membrane *in vitro*. Furthermore we examined drug permeation with the Franz cell method using excised human epidermis and chick chorioallantoic membrane ex vivo. Chick chorioallantoic membrane model is a new and useful biological membrane model for preclinical permeability study of pharmaceutical substances. The results showed that lyotropic liquid crystal is a potential formulation for local delivery of Genistein. This work supported by Campus Hungary Fellowship.

Biography

Boglarka Balazs has graduated as pharmacist at University of Szeged, Faculty of Pharmacy. She is 3rd year PhD student at University of Szeged, Doctoral School of Pharmaceutical Sciences. Her research fields are investigation of skin diseases with spectroscopy methods (ATR-FTIR, NIR and RAMAN), development of dermal and transdermal systems and electrically-assisted transdermal delivery. She spent one month with cooperative work in the „Victor Babes" University of Medicine and Pharmacy in Timisoara, Romania. She took three poster lectures and has two articles.

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