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In-vitro permeation model of taurine: Comparative permeation behaviour with and without corneocytes

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R educed level of Natural moisturizing factors (NMF) inside the corneocytes leads to various skin abnormalities including psoriasis and atopic dermatitis. The permeation behavior of these NMF, including amino acids and urea, has yet not been studies in relation to corneocytes. Therefore, this work is done to determine the permeation behavior of taurine that is the most hygroscopic amino acid of NMF in the corneocytes and can play a crucial role in the rejuvenation of the psoriatic or dermatitis skin. Two *in-vitro* permeation models were developed. Both models comprised of three sets of compartments, each set with a sub-compartment, donator and acceptor, which are separated by a synthetic dialyzing membrane. Model 1 contained only taurine in each donator compartment while model 2 was filled with taurine along with Ex-NMF corneocytes (10 mg/ml). The medium (distilled water) was kept at 32°C, pH=7 with continuous stirring. Samples were withdrawn at pre-determined time intervals (0.5, 1, 2, 4, 8, 12 till 72 h) and analyzed by LCMS after pre-column derivatization with FMOC-CL. In the model 1 the concentration of taurine in all the three acceptor subcompartments increased exponentially and after 24 h reached to equilibrium which remained the same until 72 h. While in model 2 the taurine concentration increased exponentially and equilibrium reached after 24 h but after 24 hours it decreased linearly until 48 h and was same till 72 h. The above results showed that corneocytes started absorbing taurine once the equilibrium reached and engulfed up to about 60% of the taurine from the outside environment. So, the partition coefficient of taurine in the model 1 is 1.64 × 106 while in the model 2 is 1.55×106 . So, under the light of above conclusion this model can be used further for determination of other NMF related hydrophilic molecules to be used in the development of formulations used to rejuvenate the psoriatic skin.

Biography

Hina Hussain is currently working in the research laboratory of the Biopharmacy with specific focus on the psoriasis at the level of corneocytes. She has her experience in the preparation of corneocytes from the skin obtained after pedicure treatment and also from the stripping method. She has already worked on the development of in- vitro permeation model of hydrophilic molecules that are special focus of today's research on dermal drug delivery system due to their poor absorption through stratum corneum. Her goals are towards development and optimization of dermal drug delivery system for the treatment of psoriasis and atopic dermatitis.

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