QUANTIFICATION AND VISULIZATION OF TAURINE DELIVERY AND PENETRATION INTO SKIN

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Taurine is used in many personal care products to help deliver skin repair and anti-irritation benefits. Enhancing the deposition and penetration of taurine in skin is likely to boost the performance of these products. In this study, we demonstrated the deposition of taurine onto skin surfaces through a serum formulation, as well as enhanced penetration of taurine into deeper skin layers, aided by permeation enhancers such as glycerin and dimethyl isosorbide. We used a tape stripping method to collect samples from porcine skin and, coupled with HPLC analysis, to quantify the deposition and penetration of taurine. Serum formulations containing different levels of the permeation enhancers were tested. Glycerin and dimethyl isosorbide were found particularly effective and showed a dose-response manner to enhance the taurine penetration. We also employed two spectroscopic techniques, ATR-FTIR and confocal Raman to visualize the taurine distribution in the skin. The hyperspectral images of both IR and Raman clearly demonstrated the increased penetration of taurine into the deeper layers of the skin, beyond stratum corneum and into the epidermis, through the use of these permeation enhancers. These observations are consistent with the results from the tape stripping-HPLC analyses.