Quantification of Natural Moisturising Factors at the skin surface using a portable infrared spectrometer device: a pilot calibration model

John Chittock, Kirsty Brown, Michael J. Cork and Simon G. Danby
Sheffield Dermatology Research, The University of Sheffield UK

ACKNOWLEDGEMENTS: We thank Leung Tang at Agilent for his training in chemometric analysis

AIM: To combine Infrared Spectroscopy with chemometric analysis to model surface Natural Moisturising Factor (NMF) levels in vivo

- NMF is a biomarker of FLG status1 and skin dryness2. FLG-related Atopic Dermatitis (AD) is associated with more severe / persistent disease3

1) In vivo Fourier Transform Infrared Spectroscopy (FTIR)

FTIR spectra of skin showing NMF carboxylate signal (red) at 1600, 1410 and 1340 cm⁻¹

CURRENT METHODS OF NMF QUANTIFICATION

- FTIR NMF nmoles mg⁻¹

CONCLUSIONS

- FTIR combined with chemometric analysis is well suited for the instantaneous in vivo quantification of NMF at the skin surface
- Further model validation in larger cohorts is required
- The use of a portable FTIR device makes this methodology suitable for any clinical setting
- In vivo quantification of NMF provides information on the inherited1 and acquired2 FLG deficiency, and may inform long term clinical treatment strategies in AD

REFERENCES


For a digital copy of the poster please follow the links below

https://www.sheffield.ac.uk/iicod/research/rv/dermatology

@Shef_Derm