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7 | Computational characterization of reflectance confocal microscopy features reveals potential for automated photoageing assessment.

ABSTRACT

Skin photoageing results from a combination of factors including ultraviolet (sun) exposure, leading to significant changes in skin morphology and composition. Conventional methods assessing the degree of photoageing, in particular histopathological assessment involve an invasive multistep process. Advances in microscopy have enabled a shift towards non-invasive in vivo microscopy techniques such as reflectance confocal microscopy (RCM) in this context. Computational image analysis of RCM images has the potential to be of use in the non-invasive assessment of photoageing. In this report, we computationally characterized a clinical RCM data set from younger and older Caucasians with varying levels of photoageing. We identified several mathematical relationships that related to the degree of photoageing as assessed by conventional scoring approaches (clinical photography, SCINEXA and RCM). Furthermore, by combining the mathematical features into a single computational assessment score, we observed significant correlations with conventional RCM (P < 0.0001) and the other clinical assessment techniques.