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Comparison of UV-induced skin changes in sun-exposed vs. sun-protected skin- preliminary evaluation by reflectance confocal microscopy

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ABSTRACT

BACKGROUND: UV radiation (UVR) represents the main risk factor for skin cancer. Sunscreens are commonly used to prevent acute and chronic effects of UVR.

The efficacy of sunscreens is currently determined by measurement of minimal erythema dose. Reflectance confocal microscopy represents a non-invasive imaging technique that allows the in- vivo characterization of the skin at near histological resolution.

OBJECTIVE: The aim of this study was to compare standardized clinical and histological features of UV-exposure with morphological changes detected by RCM.

Results RCM allowed the detection of morphological changes induced by UV including spongiosis, sunburn cells, micro-vesicles and blood vessel dilatation.

The appearance of sunburn cells and micro-vesicles was depending on the dose of UV-B and on the individual susceptibility of the study participants.

CONCLUSION: RCM seems to be beneficial for the non-invasive evaluation of dynamic changes following acute UV exposure.

Similar to histopathology RCM allows the characterization of sunburn cells and micro-vesicle formation as a sign for acute photo damage.

RCM may therefore be used for classification of sunburn reaction and to test the efficacy of sunscreens on a cellular level.