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How long does protection last?--in vivo fluorescence confocal laser scanning imaging for the evaluation of the kinetics of a topically applied lotion in an everyday setting.

Sattler E, Kästle R, Arens-Corell M, Welzel J.; Skin Res Technol. 2012 Aug;18(3):370-7. doi: 10.1111/j.1600-0846.2011.00579.x.

ABSTRACT

BACKGROUND: Confocal laser scanning microscopic imaging is well established as a helpful diagnostic tool in dermatology. With a new generation of multi-wave laser confocal microscopes now, in addition to the reflection mode, examinations with fluorescent agents are possible in vivo and ex vivo. Gathering details on the physical, chemical and kinetic features of different fluorophores in different vehicles in healthy skin in vivo will be of interest for therapeutic as well as cosmetic dermatology.

OBJECTIVES: Objective of this study was to determine the kinetics of the protective function of a topically applied, fluorescent-containing lotion in a 24 h everyday setting in healthy volunteers using fluorescence confocal laser scanning microscopy imaging.

MATERIAL AND METHODS: Fifteen volunteers received a standardized application of a sodium fluoresceine containing lotion. At several time points of a 24 h interval confocal laser imaging in the multi-wave mode was performed. Fluorescence was measured by a semiquantitative score and by one based on the intensity of light.

RESULTS: CLSM images in the depths of the stratum corneum and of the upper epidermis of all 15 panelists showed a detectable fluorescence after 30 min and 4 h and after 24 h, a partial fluorescence was still visible in 10 of 15 persons. Similar results were achieved using a semiquantitative score and by measuring the intensity of light.

CONCLUSION: Sodium fluoresceine as a safe and efficient fluorophore for in vivo fluorescence CLSM was able to visualize the kinetics of a topically applied protective lotion and was able to be detected for up to 4 h in all panelists and even up to 24 h in two-thirds of the healthy volunteers showing the long duration of the fluorescence on the skin surface, even in an everyday setting.