

Narrow-band UVB induced externalization of selected nuclear antigens in keratinocytes: Implications for lupus pathogenesis

A. Reich¹, M. Meurer², D.J. Muller³

¹Department of Dermatology, Venereology and Allergology, Wrocław Medical University, Poland

²Department of Dermatology, Carl Gustav Carus Medical Faculty, University of Technology, Dresden, Germany

³Biotechnological Center, University of Technology, Dresden, Germany

Objectives: To analyse, whether membrane protrusions on keratinocytes induced by narrow-band ultraviolet irradiation (NB-UVB) show reactivity with sera from LE patients positive for antinuclear antibodies.

Results: We applied atomic force microscopy (AFM) to visualize cell surface structures expressing nuclear antigens upon apoptosis following narrow band ultraviolet B (NB-UVB) irradiation. Immortalised human keratinocytes (HaCaT) were cultured under standard conditions, irradiated with 800 mJ/cm² NB-UVB light and imaged by AFM mounted on an inverted optical microscope. It was observed, that NB-UVB irradiation provoked significant alterations of the keratinocyte morphology and led to the membrane expression of antigens recognized by anti-La and anti-Ro sera but not by anti-double-strand DNA sera. The presence of La and Ro antigens on keratinocyte surfaces after NB-UVB irradiation was limited mainly to the small bleb-like protrusions found on the keratinocytes by AFM. A closer investigation by AFM also revealed that some structures positively stained with anti-Ro serum were also located submembranously.

Conclusions: We hypothesize that the externalisation of some nuclear antigens due to NB-UVB exposure might be responsible for exacerbation of skin symptoms in patients suffering from lupus erythematosus.