

Publication**Ultraviolet irradiation induces apoptosis in human immature, but not in skin mast cells****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4507676**Author(s)** Guhl, Sven; Hartmann, Karin; Tapkenhinrichs, Silke; Smorodchenko, Alina; Grützkau, Andreas; Henz, Beate M.; Zuberbier, Torsten**Author(s) at UniBasel** [Hartmann, Karin](#) ;**Year** 2003**Title** Ultraviolet irradiation induces apoptosis in human immature, but not in skin mast cells**Journal** Journal of Investigative Dermatology**Volume** 121**Number** 4**Pages / Article-Number** 837-44**Mesh terms** Apoptosis, radiation effects; Caspase 3; Caspases, metabolism; Cell Differentiation; Cell Division; Cell Line, Tumor; Cytochromes c, metabolism; Humans; Leukemia; Mast Cells, cytology, metabolism, radiation effects; Mastocytosis; Poly(ADP-ribose) Polymerases, metabolism; Skin, cytology; Tumor Suppressor Protein p53, metabolism; Ultraviolet Rays, adverse effects

As diverse pruritic cutaneous diseases respond to ultraviolet treatment, we have examined whether ultraviolet light is capable of inducing apoptosis in mast cells. Human mast cell line 1 (HMC1) derived from a patient with malignant mastocytosis and purified skin mast cells were irradiated with single doses of ultraviolet B or ultraviolet A1, or pretreated with 8-methoxypsoralen prior to ultraviolet A1 exposure. After 0 to 48 h of incubation, the percentage of apoptotic and dead cells was assessed. In HMC1 cells, morphologic features of apoptosis were further evaluated by electron microscopy. All ultraviolet treatment induced apoptosis of HMC1 cells in a time- and dose-dependent manner. Apoptosis was associated with activation of caspase-3, release of cytochrome C, cleavage of poly(ADP-ribose)-polymerase, and nuclear accumulation of p53. In contrast, resting skin mast cells were resistant to ultraviolet light induced apoptosis. After incubation with stem cell factor and interleukin-4 for 2 wk, however, slowly proliferating skin mast cells also underwent apoptosis in response to ultraviolet light. In conclusion, these data demonstrate that ultraviolet light directly affects mast cells, but mainly aims at the proliferating mast cells as found in mastocytosis and mast cell dependent pruritic diseases, where increased numbers are observed due to the recruitment mast cell precursors from the blood.

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