ENDOGENOUS GLUTATHIONE PROTECTS HUMAN SKIN FIBROBLASTS AGAINST THE CYTOTOXIC ACTION OF UVB, UVA AND NEAR-VISIBLE RADIATIONS

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ABSTRACT

Both the UVB (290-320 nm) and UVA (320-380 nm) regions of sunlight damage human skin cells but, particularly at the longer wavelengths, information is scant concerning the mechanism(s) of damage induction and the roles of cellular defense mechanisms. Following extensive glutathione depletion of cultured human skin fibroblasts, the cells become strongly sensitized to the cytotoxic action of near-visible (405 nm), UVA (334 nm, 365 nm) and UVB (313 nm) but not UVC (254 nm) radiations. In the critical UVB region, the magnitude of the protection afforded by endogenous glutathione approaches that of the protection provided by excision repair. The results suggest that a significant fraction of even UVB damage can be mediated by free radical attack and that a major role of glutathione in human skin cells is to protect them from the cytotoxic action of sunlight.

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