

〈原 著〉

AP-1 活性化と MMP-1 産生への紫外線の影響

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Influence on AP-1 Activation and MMP-1 Expression by UV Irradiation to Human Normal Dermal Fibroblasts

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Abstract

Solar ultraviolet (UV) radiation has been implicated as a major factor in skin photoaging. Ultrastructural evidence indicates that dermal extracellular matrix components such as collagen and elastin fibers are severely damaged in photoaged skin. UVA (320–400 nm) penetrates deeper into the dermis than UVB (290–320 nm) and is responsible for the denaturation of collagen and elastin fibers. It is known that matrix metalloproteases (MMP) such as collagenase (MMP-1) lead to the denaturation. MMP-1 expression is regulated by transcription factor activator protein-1 (AP-1). In the present study, we show AP-1 activation and subsequent MMP-1 production by UVA light in human dermal fibroblasts by using an electrophoretic mobility shift assay (EMSA) and an enzyme-linked immunosorbent assay (ELISA), respectively. It is found that these UVA-induced damages are accelerated by hematoporphyrin which is a photosensitive reagent and generates singlet oxygen. These results suggest that the UVA-induced photodamage in dermis is involved in a photosensitizing reaction.

Key words: ultraviolet light, AP-1, MMP-1, collagenase, photosensitizing reaction.