

〈一般論文〉

UVA Irradiation-Induced Accumulation of Fibrillin-1 Fibers in Cultured Human Skin Fibroblast Cells

Satoshi ONOUE*¹, Hiroshi WACHI*², Fumiaki SATO², Risa NONAKA², Chiharu KOIDE¹,
Akinobu HAYASHI¹, Yoshiyuki SEYAMA²

(Accepted: September 17, 2008)

Abstract

Elastic fibers provide elasticity to tissues such as arterial walls, lungs, skin, and ligaments. Fibrillin-1, an extracellular matrix protein that functions as a scaffold for the elastin fiber assembly, is a major component of elastic fibers. Chronically sun-exposed human skin is known to be characterized by dermal connective tissue damage with accumulation of abnormal elastic fibers. However, little is known about the relationship between accumulation of abnormal elastic fibers and photodamaged skin. In the present study, we analyzed the expression of fibrillin-1 and accumulation of fibrillin-1 fibers by ultraviolet A (UVA) irradiation, using cultured human skin fibroblast cells. UVA irradiation decreased fibrillin-1 protein and mRNA levels in a dose- and time-dependent manner as assessed by Western blot analysis and real-time RT-PCR, respectively. Moreover, on performing an immunofluorescence assay, we observed an increased thickness of fibrillin-1 fibers after exposure to repeated UVA irradiation. These results suggest that the accumulation of abnormal elastic fibers in photodamaged skin results from the deposition of accumulation fibrillin-1 fibers. The present study is useful for understanding the progression of solar elastosis, which would be helpful in developing treatments for photodamaged skin.

Key words: elastic fiber, fibrillin-1, fiber formation, skin fibroblast cells, UVA irradiation.