

〈一般論文〉

## 霊芝の皮膚線維芽細胞における DNA 損傷修復促進効果

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### Accelerating Effect of Reishi (*Ganoderma lucidum*) on DNA Damage Repair in Human Dermal Fibroblasts

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#### Abstract

DNA damages including cyclobutane pyrimidine dimmers (CPD) and (6-4) photoproducts cause serious effects such as skin aging. It has been already reported that the function of DNA damage repair enzymes is reduced by UV irradiation. Therefore, the restoration of this reduced function might be important for anti-aging. We investigated the effect of Reishi (*Ganoderma lucidum*) extract, which is one of the old Chinese medicine materials, on DNA damage repair in human dermal fibroblasts. By immunohistochemical staining, CPD was detected in UVB-irradiated fibroblasts, however, Reishi extract reduced this DNA damage. To investigate this mechanism, we focused on the XP proteins, which are required for the DNA damage repair mechanism. As a result, *XPC*, *XPG* mRNA expression and XPC protein level were down-regulated in UVB-irradiated fibroblasts, however, Reishi extract suppressed these changes. Next, we examined that the change of inflammatory cytokine expression at that time. *IL-6*, *IL-8* mRNA expression was up-regulated in UVB-irradiated fibroblasts, however, Reishi extract suppressed this change. Furthermore, we examined the effect of IL-8 on collagen metabolism. *Type I procollagen* mRNA expression was down-regulated, and *MMP-1*, *MMP-2* mRNA expression was up-regulated in IL-8-stimulated fibroblasts. These results demonstrate that Reishi extract enhances the capacity of DNA damage repair in human dermal fibroblasts, causing the prevention and improvement of skin aging.

**Key words:** Reishi, XP, DNA damage, UV, fibroblast.