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〈一般論文〉

酸化ストレスによる真皮由来 Neuregulin 1（NRG1）を介したメラニン生成促進

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Oxidative Stress-Induced Melanogenesis Promotion Mediated by Dermis-Derived Neuregulin 1（NRG1）

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Abstract

Neuregulin 1（NRG1）, one of neurotrophic factors, plays an important role in the differentiation and development of nerve cells and glia cells. Recently, it was reported that NRG1 is expressed in dermal fibroblasts and regulates the constitutive color of human skin. Furthermore, effects of NRG1 on the melanogenesis in melanocytes became apparent. In this study, the relationship between skin pigmentation induced by UV rays and NRG1 was investigated. It is known that reactive oxygen species（ROS）are generated in UV-irradiated skin and enhance the melanogenesis. H_2O_2, one of ROS, exposure enhanced NRG1 expression on mRNA and protein level in dermal fibroblasts. Although culture supernatant of H_2O_2 exposed fibroblasts upregulated mRNA expression of melanogenesis related-factors in melanocytes, these changes were suppressed by NRG1 neutralizing antibody. Moreover, NRG1 exposure increased mRNA expression of melanogenesis related-factors in melanocytes. On the basis of these results, it was considered that ROS induced by UV rays enhance NRG1 production in dermal fibroblasts and this NRG1 upregulates melanogenesis in melanocytes and consequently induces skin pigmentation. Although most of the existing studies on the accelerating mechanism of melanogenesis focus on the epidermal-derived factors, NRG1 is produced by dermal fibroblasts and gets involved in melanogenesis. Therefore, NRG1 is considered to be a novel dermal-derived factor inducing skin pigmentation after UV rays exposure.

Key words:　neuregulin 1（NRG1）, dermal-derived factor, fibroblast, melanogenesis, H_2O_2.