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Anti-photoaging effects of ammonium glycyrrhizate in UVB-irradiated HaCaT keratinocytes and

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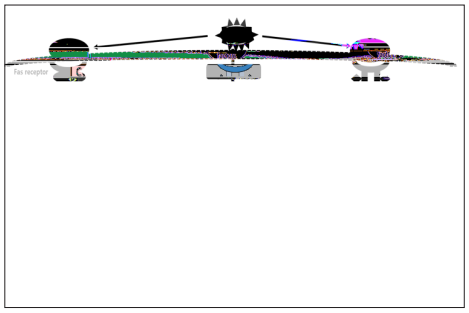

Among many environmental factors, solar ultraviolet irradiation is considered the main cause of skin aging in humans. In this study, the protective e ect of ammonium glycyrrhizate (AG), an active component of Licorice root, on UVA- and UVB-induced photo-toxicity was investigated. e antioxidant phytochemical AG has been reported to have various pharmacological properties including cardio-protective, anti-in ammatory and soothing e ects on sensitive skin. Despite the known therapeutic e ect of AG, the molecular mechanisms related to the photo-protection of AG against UV-induced oxidative cell damage has not yet been determined. In UVB-irradiated HaCaT keratinocytes, AG inhibited both oxidative stress and the apoptosis signaling pathway. In addition, AG promoted the activities of the antioxidant enzymes heme oxygenase-1 (HO-1), glutathione peroxidase 1/2 (Gpx1/2) and superoxide dismutase 2 (SOD2) by translocating nuclear factor (erythroid-derived 2)-like 2 (Nrf2) in the nucleus. In UVA-irradiated human dermal broblasts, AG suppressed the expression of secreted matrix metalloproteinase (MMP)-1 and -9 by inhibiting the activator protein-1 (AP-1) transcription factor. Furthermore, AG remarkably increased the synthesis of pro-collagen in human dermal broblasts (HDF). ese results suggest that AG has protective e ects against UVA and UVB-induced photoaging and should be considered a potential therapeutic agent against photo-toxicity in skin.

Recent Publications

1. Kyu-Bong Kim, Young Woo Kim, Seong Kwang Lim, Tae Hyun Roh, Du Yeon Bang, Chang Won Park, Hyung Sik Kim, Byung-Mu Lee (2017) Toxicological and risk assessment of zinc oxide nanoparticles, a cosmetic ingredient used as a UV lter in sunscreens. *J. T , E H P B.;* 20(3): 155-182.
2. Min Ji Kim, Seung Jun Kwack, Seong Kwang Lim, Yeon Joo Kim, Tae Hyun Roh, Seul Min Choi, Hyung Sik Kima, Byung Mu Lee (2015) Toxicological evaluation of isopropylparaben and isobutylparaben mixture in Sprague-Dawley rats following 28 days of dermal exposure. *R . T , . P .*; 73(2): 544-51.

Biography

Byung-Mu Lee has his expertise in development of anti-aging and anti-inþammation agents. He is also interested in chemoprevention and risk assessment. He is an Associate Editor of the *Journal of Toxicology and Environmental Health A, Food and Chemical Toxicology* and Editorial Review Board of *Environmental Health Perspectives* (EHP) and Advisory Editor of *Archives of Toxicology*. He was the Vice President of International Association of Environmental Mutagenesis and Genomics Society (IAEMGS) and Vice President of the Asia Society of Toxicology (ASIATOX).

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