Synopsis of Original Research Paper

Protective effect of pre– and post–vitamin C treatments on UVB-irradiation–induced skin damage.

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Several studies have reported the effects of vitamin C (L-ascorbic acid, AA) on ultraviolet B (UVB)-induced cell damage using cultured keratinocytes. However, the epidermis consists of multiple cell layers, and the effect of AA on UVB-induced damage to the human epidermis remains unclear. Therefore, we investigated the effect of AA on UVB-induced skin damage using reconstituted human epidermis. The reconstituted human epidermal surface was treated with 100 and 500 mM AA and cultured for 3 h before (pre-AA treatment) or after (post-AA treatment) 120 mJ/cm^2 UVB irradiation. Pre- and post-AA treatments of the epidermal surface suppressed UVB-induced cell death, apoptosis, DNA damage, reactive oxygen species (ROS) production, and the inflammatory response by downregulating tumour necrosis factor-α (TNF-α) expression and release. Moreover, the pre-AA treatment was more effective at preventing UVB-induced skin damage than the post-AA treatment. In summary, pre- and post-AA treatments of the epidermis prevent UVB-induced damage.