

Photoprotective Effect of Red Ginseng against Ultraviolet Radiation-induced Chronic Skin Damage in the Hairless Mouse

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To evaluate the ability of red ginseng (RG) to protect the skin from photodamage, We examined the gross and microscopic changes in the skin of hairless mice exposed chronically to UVB and RG-treated mice. The skin of the UVB-irradiated mouse shows characteristic signs of photoaging, such as deep wrinkles across the back, and thickened and leathery skin. Histologically, the photoaged skin shows increased epidermal thickness, numerous fibroblasts and inflammatory cell infiltration in the upper dermis, and many enlarged keratinizing cysts in the lower dermis. By the 22th week, 94.4% (UVB control) or 80.0% (UVB and cream vehicle control) in UVB-irradiated mice developed at least one macroscopic mass. Histologically, the mass is hyperplasia, papilloma or squamous cell carcinoma. RG-treated mice show a significantly decreased wrinkling score, minimal epidermal hyperplasia, slightly increased dermal cellularity, and lack of proliferation of cysts. RG delayed mass onset significantly. By the 22th week, 85.7% (UVB and intraperitoneal injection group with RG) or 78.6% (UVB and topical application group with RG cream) of mice had developed at least one macroscopic mass. RG was also effective in reducing the occurrence of UVB radiation-induced skin tumors and reduced the number of tumors per mouse. The skin which is chronically exposed to UVB is subject to photoaging and photocarcinogenesis and regular use of RG would prevent these photodamaging effects of UVB.