



The Effects of Green Tea on the Skin

Studies Relating to the Benefits of Green Tea on the Skin

Photodermatol Photoimmunol Photomed. 2007 Feb;23(1):48-56.

Photoprotective effects of green tea polyphenols.

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Abstract

Non-melanoma skin cancer is the most common malignancy in humans and is equivalent to the incidence of malignancies in all other organs combined in the United States. Current methods of prevention depend on sunscreens in humans, efficacy of which is largely undetermined for non-melanoma skin cancers. Green tea polyphenols have the greatest effect with respect to chemoprevention and have been found to be most potent at suppressing the carcinogenic activity of UV radiation. They protect against many of the other damaging effects of UV radiation such as UV-induced sunburn response, UV-induced immunosuppression and photoaging of the skin. They exert their photoprotective effects by various cellular, molecular and biochemical mechanisms in in vitro and in vivo systems. Green tea polyphenols thus have the potential, when used in conjunction with traditional sunscreens, to further protect the skin against the adverse effects of ultraviolet radiation.

Exp Dermatol. 2009 Jun;18(6):522-6.

Topical application of green and white tea extracts provides protection from solar-simulated ultraviolet light in human skin.

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Abstract

BACKGROUND: Tea polyphenols have been found to exert beneficial effects on the skin via their antioxidant properties. **AIMS:** We sought to determine whether topical application of green tea or white tea extracts would prevent simulated solar radiation-induced oxidative damages to DNA and Langerhans cells that may lead to immune suppression and carcinogenesis. **METHODS:** Skin samples were analysed from volunteers or skin explants treated with white tea or green tea after UV irradiation. In another group of patients, the in vivo immune protective effects of green and white tea were evaluated using contact hypersensitivity to dinitrochlorobenzene. **RESULTS:** Topical application of green and white tea offered protection against detrimental effects of UV on cutaneous immunity. Such protection is not because of direct UV absorption or sunscreen effects as both products showed a sun protection factor of 1. There was no significant difference in the levels of protection afforded by the two agents. Hence, both green tea and white tea are potential photo-protective agents that may be used in conjunction with established methods of sun protection.

Exp Dermatol. 2009 Jan;18(1):69-77. Epub 2008 Jul 9.

Green tea extract reduces induction of p53 and apoptosis in UVB-irradiated human skin independent of transcriptional controls.

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Abstract

Ultraviolet (UV) irradiation plays a pivotal role in human skin carcinogenesis. Preclinically, systemically and topically applied green tea extract (GTE) has shown reduction of UV-induced (i) erythema, (ii) DNA damage, (iii) formation of radical oxygen species and (iv) downregulation of numerous factors related to apoptosis, inflammation, differentiation and carcinogenesis. In humans, topical GTE has so far only been tested in limited studies, with usually very high GTE concentrations and over short periods of time. Both chemical stability of GTE and staining properties of highly concentrated green tea polyphenols limit the usability of highly concentrated green tea extracts in cosmetic products. The present study tested the utility of stabilized low-dose GTE as photochemopreventive agents under everyday conditions. We irradiated with up to 100 mJ/cm² of UVB light skin patches which were pretreated with either OM24-containing lotion or a placebo lotion. Biopsies were taken from both irradiated and un-irradiated skin for both immunohistochemistry and DNA microarray analysis. We found that while OM24 treatment did not significantly affect UV-induced erythema and thymidine dimer formation, OM24 treatment significantly reduced UV-induced p53 expression in keratinocytes. We also found that OM24 treatment significantly reduced the number of apoptotic keratinocytes (sunburn cells and TUNEL-positive cells). Carefully controlled DNA microarray analyses showed that OM24 treatment does not induce off-target changes in gene expression, reducing the likelihood of unwanted side-effects. Topical GTE (OM24) reduces UVB-mediated epithelial damage already at low, cosmetically usable concentrations, without tachyphylaxis over 5 weeks, suggesting GTE as suitable everyday photochemopreventive agents.

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