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RE: Green Tea Not Effective in Skin Rejuvenation and Shows Skin Irritation


Green tea (*Camellia sinensis*) contains polyphenols (such as epicatechin and epigallocatechin 3-gallate [EGCG]), which may rejuvenate the skin. In vitro and in vivo, the polyphenols have anticarcinogenic, anti-inflammatory, antioxidant, and cellular regenerative properties. Based on these findings, the skin care industry often adds green tea extracts to topical preparations for aging skin. It is not known whether it is possible to deliver adequate doses of green tea to a person's skin to produce clinical or histologic improvement. There have been a few studies that show the efficacy of green tea on photoaging but they all include fewer than 10 volunteers. The purpose of this study was to use a larger population to investigate the clinically visible effects of green tea treatment on aging skin.

Healthy women (*n* = 40) with moderate photoaging participated in this double-blind, randomized pilot study conducted at the Stanford University, Boston, MA. For 8 weeks, participants were asked to apply 10% green tea extract cream twice a day to the face and arms, take a 300 mg green tea oral supplement twice a day, and use a cleanser and sunscreen. The green tea cream was made from the same product as the oral capsules. Caffeine was removed from the capsules to a specification of < 0.5% so as to reduce the possible side effects associated with caffeine. The capsules contained (-)-epigallocatechin gallate (38%), (-)-epicatechin gallate (14%), (-)-epicatechin (7%), (-)-epigallocatechin (6%), (-)-gallocatechin gallate (4%), and catechin (1%). The authors do not specify the manufacturer of these products. Participants randomized to the placebo group underwent a similar regimen but with a placebo. Skin biopsies were performed at baseline and at the end of 8 weeks of treatment. Patients answered a questionnaire about their facial skin and a dermatologist also graded their facial skin.
Three participants withdrew from the study due to skin irritation from the green tea cream. In addition, several participants complained that the green tea cream was drying and irritating their skin. Two participants in the green tea group reported sun sensitivity. There was no significant difference between groups as related to wrinkles and roughness. Placebo treated patients had significantly less dry skin (P < 0.01) and superior overall appearance (P < 0.05) according to the self-assessment. The green tea group had a significantly better improvement in skin elasticity compared to the placebo group (P = 0.021). There were no significant differences between the groups according to the physician ratings.

The authors conclude that the 10% concentration of green tea is too irritating for commercial use. Even though the skin care industry touts the beneficial effects of green tea extract on photoaging, clinically significant changes could not be observed after 8 weeks of both topical and oral supplementation. Possibly a different dose or duration of treatment could produce clinically significant results. It is not known whether the oral or topical component or the combination was responsible for the improved elasticity. Even with the improved elasticity, the authors still reported no clinically significant improvement. The authors do not consider that another ingredient in the green tea extract cream might have been responsible for the observed adverse events and do not provide a comprehensive list of ingredients in the product. Nor is consideration given to the possibility that the combination of green tea capsules and green tea extract cream may have been excessive, thus resulting in adverse events. More studies on green tea extract products are needed to determine the efficacy and safety of green tea extract in skin products.

—Heather S. Oliff, PhD

The American Botanical Council has chosen not to reprint the original article.