

# A two-year, double-blind, randomized placebo-controlled trial of oral green tea polyphenols on the clinical and histologic appearance of photoaging skin

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## Introduction

Green tea polyphenolic compounds (GTPs) from the plant *Camellia sinensis* have been reported to attenuate the effects of photoaging through anti-oxidant, anti-inflammatory, and anti-carcinogenic mechanisms.

GTPs have been reported to reduce epidermal thinning, regenerate keratinocytes, increase dermal collagen, and counteract the effects of photoaging in animal models and in vitro.

The only randomized, double-blind, placebo-controlled study

on photoaging and GTPs showed increased elastin content on histology, but no clinical changes after 8 weeks of topical and oral GTPs.

## Support

This study was sponsored by NuSkin International.

## Methods & Materials

To evaluate the long-term effects of oral GTPs on the clinical and histologic characteristics of photoaging skin.

## Objective

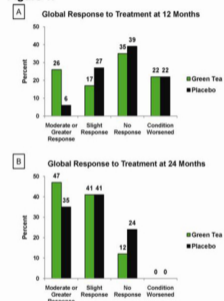
Double-blind, placebo-controlled trial of 56 women aged 25-75 randomized to 250 mg GTPs or placebo twice daily for two years.

A blinded dermatologist scored the appearance of photodamaged facial skin at 0, 6, 12, and 24 months.

A blinded dermatopathologist scored the histologic characteristics of sun-exposed arm skin at 0 and 24 months.

## Results

**Figure 1.**



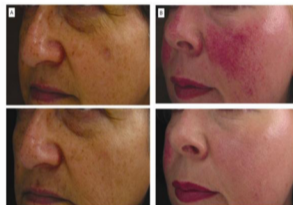
•GTPs improved overall solar damage ( $p=0.02$ ) and erythema/ telangiectasia ( $p=0.05$ ) at 6 months.

•GTPs improved erythema/ telangiectasia at 12 months ( $p=0.02$ ).

•The above changes were not detectable at 24 months, likely due to dropout rate.

•No significant differences in histological parameters of photoaging at 12 or 24 months.

**Figure 2.** (A) Example of subject with reduction in overall solar damage. (B) Example of subject with reduction of erythema/ telangiectasias.



## Conclusions

•This is the largest double-blind, randomized, placebo-controlled clinical trial on this subject reported to date.

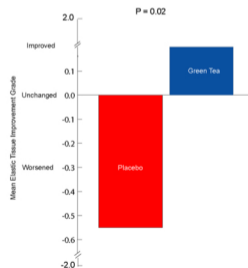
• This study suggests that GTPs may improve overall solar damage and erythema/ telangiectasia within 12 months.

•Larger studies may indicate continued benefit over longer time periods.

## Tegreen 97 Elastin Pre-Clinical Study

In 2005, Nu Skin scientists worked together with the Department of Dermatology at Stanford University's School of Medicine to complete a pre-clinical study on Tegreen 97. The study measured the effects of a combination of topical and oral forms of green tea extracts on the histology (tissue structure) of skin in 40 healthy women. After only eight weeks, the study revealed that histologically, there was a significant improvement in the skin's elastic tissue content (see figure 1). "Previous studies with green tea have shown it to be a powerful antioxidant that can help prevent photo damage in the skin," said study author Alexa Boer Kimball, M.D., MPH, director of clinical trials. "This study suggests that green tea may also promote elastic tissue remodeling when used for a relatively short time. Longer and larger studies will be helpful in teasing out the long-term effects of the oral versus the topical formulations on visible signs of photo-aging."

## Change in elastic tissue content over eight weeks



Reference: Chiu AE, Chan JL, Kern DG, et al. Double-blinded, placebo-controlled trial of green tea extracts in the clinical and histologic appearance of photoaging skin. *Dermatol Surg* 2005;31:855-60; discussion 60.