



A Randomized Placebo-Controlled Pilot Trial to Assess the Effects of 5 Different Food Supplements on Skin

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Introduction

Recent consumer trends show widespread use of supplements and tremendous public belief in their benefits. Previous studies in-vitro and animal models have suggested that gelatin, borage oil, green tea extract, gotu kola, and low molecular weight hyaluronic acid may have beneficial effects on the skin, such as ultraviolet (UV) radiation protection or preventing collagen breakdown with age. However, whether oral supplementation with these products can provide improvements in UV-damaged human skin remains unclear.

The purpose of this study was to assess the effects of 5 systemic nutritional food supplements: 1) Gelatin, 2) Borage Oil/Fish Oil, 3) Green Tea Extract, 4) Centella Asiatica (Gotu Kola), and 5) Low Molecular Weight Hyaluronic Acid on biological markers associated with the chronological and environmental aging of the skin.

Methods & Materials

Sixty healthy male volunteers with Glogau skin age 2-3 were randomized to take one of 5 different nutritional supplements, hyaluronic acid (600mg bid), gelatin (250 mg bid), borage seed oil and fish oil in combination (1.5gm/1.5gm bid), green tea (300mg bid), Gotu kola (90mg bid), or placebo for 8 weeks. Subjects were seen at baseline, week 4, and week 8. At each of these visits, skin trans-epidermal water loss (TEWL), skin conductance, and skin elasticity were measured. Additionally, at baseline and at week 8, skin biopsies were taken from a sun-exposed area.



Results

52 subjects completed the study. The average cutometer measurements, an inversely related indicator of skin elasticity, were significantly lower in subjects supplemented with gelatin ($p < 0.05$) and in those on fish oil/borage oil when compared to subjects on placebo ($p < 0.05$). Although the cutometer measurements did not decrease over time in these groups, they remained constant while the measurements for the placebo group and all other groups increased.

The average measurement of conductance which reflects the water content in the epidermis was significantly higher in the subjects treated with green tea than in those on placebo ($p < 0.05$). Additionally in this group a significant difference in perivascular inflammation was noted on histology when compared with placebo ($p = 0.05$).

No other significant benefits or deleterious effects were noted during this study for any of these parameters. None of the supplements were found to have any effect on trans-epidermal water loss and no other effects were seen on histology.

Conclusions

Subjects randomized to oral supplementation with gelatin, and combination borage seed oil/fish oil demonstrated greater skin elasticity at the end of the study than at baseline as measured by cutometry. Those subjects supplemented with green tea had increased skin conductance and decreased perivascular inflammation. Those subjects supplemented with gotu kola, and hyaluronic acid for 8 weeks did not improve TEWL, skin conductance or elasticity.

This pilot study suggests oral gelatin and borage/fish oil may have benefits on skin elasticity, but whether this will ultimately translate into clinically visible improvements will require further investigation. It also supports the hypothesis that green tea has potent antiinflammatory properties.

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