Impact of oral green tea catechins on UVR-induced inflammation in humans: a randomized controlled trial

Citation for published version (APA):

Published in:
Oral presentation

Copyright and moral rights for the publications made accessible in the Research Explorer are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Takedown policy
If you believe that this document breaches copyright please refer to the University of Manchester’s Takedown Procedures [http://man.ac.uk/04Y6Bo] or contact uml.scholarlycommunications@manchester.ac.uk providing relevant details, so we can investigate your claim.
Impact of oral green tea catechins on UVR-induced inflammation in humans: a randomized controlled trial

Mark D Farrar¹, Anna Nicolaou², Kayleigh A Clarke³, Sarah Mason¹, Karen A Massey⁴, Tristan P Dew⁴, Rachel EB Watson¹, Gary Williamson³, and Lesley E Rhodes¹

¹Centre for Dermatology, Institute of Inflammation and Repair, University of Manchester, Manchester Academic Health Science Centre, Manchester, UK
²Manchester Pharmacy School, Faculty of Medical and Human Sciences, University of Manchester, Manchester, UK
³School of Food Science and Nutrition, University of Leeds, Leeds, UK
⁴Bradford School of Pharmacy, Faculty of Life Sciences, University of Bradford, Bradford, UK

Green tea is consumed globally and is reported to have anti-inflammatory properties, which may be mediated through impact on cyclooxygenase (COX) and lipoxygenase (LOX) pathways. Recent data suggest green tea catechins (GTC) reduce acute UVR effects, and our pilot study suggested reduced UVR inflammation. Thus our aim was to perform a double-blind randomized placebo-controlled trial to examine if GTC protects against clinical, histological and biochemical indicators of UVR-induced inflammation.

Healthy adults (18-65 years, skin phototype I/II) were randomized to 1350 mg encapsulated green tea extract (540 mg GTC) with 50 mg vitamin C, or placebo (maltodextrin), twice daily for 3 months. Impact on skin erythema, dermal leukocytic infiltration, and levels of pro-inflammatory eicosanoids was assessed after solar-simulated UVR-challenge, and subject compliance determined through assay of the urinary GTC metabolite EGCG glucuronide.

Volunteers were assigned to active (n = 25) or placebo (n = 25). Post-supplementation, median sunburn threshold (minimal erythema dose) was 28 (IQR 20-28) and 20 (20-28) mJ/cm² in the active and placebo groups respectively (non-significant), with no difference in area under the curve analysis for measured erythema index following a geometric series of 10 UVR doses. Skin immunohistochemistry showed increased neutrophil and CD3+ T lymphocyte numbers post-UVR in both groups (p <0.01) with no significant differences between groups post-supplementation. COX and LOX metabolites prostaglandin (PG) E₂ (vasodilator) and 12-hydroxyeicosatetraenoic acid (HETE; chemoattractant), respectively, increased post-UVR (p <0.05), with no differences between groups post-supplementation.

In a compliant mixed-sex study population, daily consumption of 1080 mg encapsulated GTC, equivalent to 5 cups of green tea, with 100 mg vitamin C, did not significantly affect the clinical or histological sunburn response, or the cutaneous production of pro-inflammatory eicosanoids. Our other work showed variable GTC and metabolite content of human skin following supplementation and impact of this awaits exploration.