



# The effect of green tea catechin consumption on DNA damage markers in healthy human skin after UVR insult: A double-blinded randomised controlled trial

[Link to publication record in Manchester Research Explorer](#)

## Citation for published version (APA):

Huq, R., Mason, S., Farrar, M., Shih, B., Clarke, K. A., Dew, T. P., Massey, K. A., Nicolaou, A., Williamson, G., Watson, R., & Rhodes, L. (2014). *The effect of green tea catechin consumption on DNA damage markers in healthy human skin after UVR insult: A double-blinded randomised controlled trial*. Poster session presented at European Society for Dermatological Research, Copenhagen.

## Citing this paper

Please note that where the full-text provided on Manchester Research Explorer is the Author Accepted Manuscript or Proof version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version.

## General rights

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](mailto:uml.scholarlycommunications@manchester.ac.uk) providing relevant details, so we can investigate your claim.



## The Effect of Green Tea Catechin Consumption on DNA Damage Markers in Healthy Human Skin after UVR Insult – A Double-Blinded Randomised Controlled Trial

R Huq<sup>1</sup>, S Mason<sup>1</sup>, MD Farrar,<sup>1,3</sup> B Shih<sup>1</sup>, K Clarke,<sup>4</sup> T Dew,<sup>4</sup> K Massey,<sup>2</sup> A Nicolaou<sup>2</sup>, G Williamson<sup>4</sup>, RE Watson<sup>1</sup>, LE Rhodes<sup>1,3</sup>

<sup>1</sup>Centre for Dermatology, Institute of Inflammation and Repair and <sup>2</sup>Manchester Pharmacy School, University of Manchester; <sup>3</sup>Salford Royal NHS Foundation Trust, Manchester; <sup>4</sup>School of Food Sciences and Nutrition, University of Leeds, UK.

Consumption of green tea catechins (GTC) is reported to protect against ultraviolet radiation (UVR)-induced skin carcinogenesis in mice, while topical application prior to UVR exposure reduces UVR-induced DNA damage in human skin. We aimed to determine whether GTC ingestion can protect against direct and oxidative DNA damage, i.e. cyclopyrimidine dimers (CPD) and 8-hydroxy-2'-deoxyguanosine (8-OHdG), following UVR challenge of healthy humans *in vivo*. Volunteers (skin type 1/2, n=49, age range 18-65) were recruited and randomised to receive 1080mg GTC with 100mg vitamin C, or identical-appearing control capsules, daily for twelve weeks. Compliance was assessed by urinary catechin metabolite analysis. Buttock skin biopsies were taken from unexposed skin and skin 24h post-exposure to 3x minimal erythema doses of UVR (290-400nm) pre- and post-supplementation. Damage biomarkers were assessed by immunohistochemical staining of frozen skin sections (5µm). A primary antibody dilution of 1:100 for CPD and 1:200 for 8-OHdG was used, with a Vector Impress secondary mouse antibody. Slides were imaged under light microscopy and number of positively stained nuclei per 1000µm<sup>2</sup> counted. Statistical analysis was by Student's t-test. Data were available for 21 control and 19 active subjects. Due to high level of baseline 8-OHdG staining in all subjects, no data could be generated for 8-OHdG. Pre-supplementation, CPD increased following UVR, from 0.17 cells/1000µm<sup>2</sup> to 3.69 cells/1000µm<sup>2</sup>, p<0.01, while no significant difference was found between groups post-supplementation, p=0.96, estimated difference 0.13 cells per 1000µm<sup>2</sup>, CI -0.07 to 0.34. Hence, there was no evidence of a protective effect of oral GTC against the direct DNA damage remaining in skin cells at 24h post UVR challenge in humans *in vivo*. More detailed assessment of impact on DNA damage and repair is ongoing.