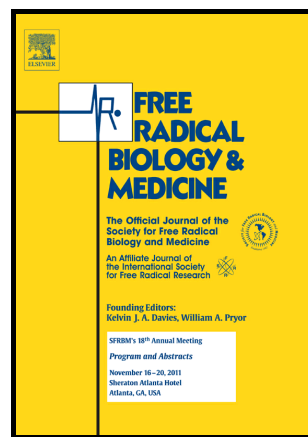


Author's Accepted Manuscript

Phospholipid oxidation and carotenoid supplementation in Alzheimer's disease patients

O.S. Ademowo, H.K.I. Dias, I. Milic, A. Devitt, R. Moran, R. Mulcahy, A.N. Howard, J.M. Nolan, H.R. Griffiths



www.elsevier.com

PII: S0891-5849(17)30132-6
DOI: <http://dx.doi.org/10.1016/j.freeradbiomed.2017.03.008>
Reference: FRB13250

To appear in: *Free Radical Biology and Medicine*

Received date: 2 September 2016
Revised date: 7 March 2017
Accepted date: 11 March 2017

Cite this article as: O.S. Ademowo, H.K.I. Dias, I. Milic, A. Devitt, R. Moran, R. Mulcahy, A.N. Howard, J.M. Nolan and H.R. Griffiths, Phospholipid oxidation and carotenoid supplementation in Alzheimer's disease patients, *Free Radical Biology and Medicine*
<http://dx.doi.org/10.1016/j.freeradbiomed.2017.03.008>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Phospholipid oxidation and carotenoid supplementation in Alzheimer's disease patientsAdemowo OS¹, Dias HKI¹, Milic I¹, Devitt A¹, Moran R², Mulcahy R³, Howard AN^{4,5}, Nolan JM², Griffiths HR^{1,6*}¹Life & Health Sciences, Aston University, Birmingham, UK² Nutrition Research Centre Ireland, Health Science, Waterford Institute of Technology, Cork Road, Waterford, Ireland³ Waterford University Hospital, Age-related Care Unit, Waterford, Ireland⁴ Howard Foundation, Cambridge, UK⁵ Downing College, University of Cambridge, Cambridge, UK⁶ Faculty of Health and Medical Sciences, University of Surrey, Guildford, UK

* Complete correspondence address: Faculty of Health and Medical Sciences, University of Surrey, Guildford, GU2 7XH, UK. Tel: +44 (0) 1483 689586. h.r.griffiths@surrey.ac.uk

Abstract

Alzheimer's disease (AD) is a progressive, neurodegenerative disease, characterised by decline of memory, cognitive function and changes in behaviour. Generic markers of lipid peroxidation are increased in AD, therefore reactive oxygen species have been suggested to be involved in the aetiology of cognitive decline. Carotenoids are depleted in AD serum, therefore we have compared serum lipid oxidation between AD and age-matched control subjects before and after carotenoid supplementation. The novel oxidised phospholipid biomarker 1-palmitoyl-2-(5'-oxo-valeroyl)-*sn*-glycero-3-phosphocholine (POVPC) was analysed using electrospray ionization tandem mass spectrometry (MS) with multiple reaction monitoring (MRM), 8-isoprostane (IsoP) was measured by ELISA and ferric reducing antioxidant potential (FRAP) was measured by a colorimetric assay.

AD patients (n=21) and healthy age-matched control subjects (n=16) were supplemented with either Macushield™ (10mg meso-zeaxanthin, 10mg lutein, 2mg zeaxanthin) or placebo (sunflower oil) for six months.

The MRM-MS method determined serum POVPC sensitively (from 10µl serum) and reproducibly (CV=7.9%). At baseline, AD subjects had higher serum POVPC compared to age-matched controls, (p=0.017) and cognitive function was correlated inversely with POVPC (r=-0.37; p=0.04). After six months of carotenoid intervention, serum POVPC was not different in AD patients compared to healthy controls. However, POVPC was significantly higher in control subjects after six months of carotenoid intervention compared to their baseline (p=0.03). Serum IsoP concentration was unrelated to disease or supplementation. Serum FRAP was significantly lower in AD than healthy controls but was unchanged by carotenoid intervention (p=0.003).

Download English Version:

<https://daneshyari.com/en/article/5502023>

Download Persian Version:

<https://daneshyari.com/article/5502023>

[Daneshyari.com](https://daneshyari.com)