## P4-560 SUPPLEMENTAL RETINAL CAROTENOIDS ENHANCE MEMORY IN HEALTHY INDIVIDUALS WITH LOW LEVELS OF MACULAR PIGMENT IN A RANDOMIZED, DOUBLE BLIND, PLACEBO-CONTROLLED CLINICAL TRIAL

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**Background:** There is a biologically plausible rationale whereby the dietary carotenoids that accumulate in the central retina (macula), where they are collectively referred to as macular pigment (MP) and which consist of lutein (L), zeaxanthin (Z) and *meso*-zeaxanthin (MZ), support the maintenance of cognition. This study investigated the impact of supplemental L, Z and MZ on memory, executive function and verbal fluency among healthy individuals with low MP levels. **Methods:** Subjects (n = 91) consumed a daily formulation of 10mg L, 10mg MZ and 2mg Z (active group; n = 45, 49% male, 44.38±11.57 years) or placebo (n = 46; 54.3% male, 46.43±13.21 years) for a period of 12-months. Cognitive performance was evaluated using methods designed to test learning, immediate and delayed memory, (verbal recognition memory task; paired associated learning [PAL] task), executive function (attention switching task) and verbal fluency (phonemic and semantic). MP was measured by dual-wavelength autofluorescence, and serum carotenoid concentrations of L, Z and MZ were quantified by high performance liquid chromatography. **Results:** Individuals in the active intervention group exhibited significant improvements in memory over the course of the study period when compared to the placebo group (baseline/exit overall PAL scores of 18.91±4.96/20.77±4.57 and 21.26±3.52/20.32±4.57, for active and placebo groups, respectively [rANOVA, p = 0.009]; PAL errors of 6.78±7.10 and 4.19±3.82 at baseline, and of 3.17±4.52 and 4.48±4.49 at exit visit, for the active intervention and placebo groups, respectively [rANOVA, p = 0.017]); furthermore, the observed reduction in the number of errors made in the PAL task amongst those in the intervention group was positively and significantly related to observed increases in MP volume (p = 0.005) and observed increases in serum concentrations of L (p = 0.009). **Conclusions:** The results of this randomized, double blind, placebo-controlled clinical trial demonstrate a memory-enhancing effect of supplementation with all three retinal carotenoids (in a MZ:L:Z ratio of [mg] 10:10:2) in healthy subjects with low MP at baseline. The potential impact of these findings for intellectual performance throughout life, and for risk of cognitive decline in later life, warrants further investigation.

## P4-561 MEDITERRANEAN DIET ADHERENCE IS ASSOCIATED WITH ATTENUATED CORTICAL THINNING IN AN AUSTRALIAN STUDY OF AGEING

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**Background:** Cortical thinning occurs with advancing age, with global thinning apparent by middle age. Specifically in Alzheimer's disease (AD), there is a distinct pattern of thinning of the cortical ribbon. While there is no cure or effective treatment currently available for AD, early intervention prevention programs hold considerable promise. Following particular dietary patterns represents one potential intervention strategy accessible to all, with adherence to healthy dietary patterns, such as the Mediterranean Diet (MeDi), proposed to be associated with improved brain health; however, the relationship of MeDi adherence to cortical thinning has not been thoroughly characterised. **Methods:** Cognitively normal participants of the Australian Imaging, Biomarkers and Lifestyle study (n=269; mean age 71.74 ± 7.0; 43% male), completed the Cancer Council of Victoria food frequency questionnaire at baseline, from which a MeDi score was computed, and underwent MRI at baseline, and at least one other timepoint over a six year period, to determine cortical thickness. Linear mixed models assessed baseline cortical thickness and trajectories of cortical thinning dependent on MeDi adherence. All models included age, gender, body mass index, years of education, *APOE* ε4 allele carrier status and energy intake, with *p*-values false discovery rate adjusted. **Results:** Cross-sectional analysis showed cortical thickness at baseline did not differ depending on MeDi adherence. However, longitudinally, higher MeDi score was associated with less decline in cortical thickness both globally and for multiple regions of interest (ROI): these ROI included frontal, occipital, parietal and temporal lobe structures ($p<0.05$; Cohen's f ranging from 0.18 to 0.34). **Conclusions:** Attenuated cortical thinning seen in those with higher MeDi adherence suggests this diet may exert a protective effect with regards to cortical integrity. These findings are in agreement with our published work whereby MeDi adherence was associated with less cognitive decline over time. The results of the current study may inform the development of non-pharmacological interventions for maintaining cortical thickness and thereby reducing the risk of cognitive impairment and AD.

## P4-562 LIVING WELL WITH DEMENTIA: A SYSTEMATIC REVIEW

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**Background:** Current policy emphasises the importance of living well with dementia, but there has been no synthesis of the factors related to quality of life (QoL), subjective well-being or life satisfaction in people with dementia. We aimed to examine the available evidence in a systematic review and meta-analysis. **Methods:** We searched Pubmed, CINAHL, Web of Science, PsycNET, AgeInfo, Zetoc, Social Care Online, and OpenGrey to January 7th 2016 for studies investigating