



## THE EFFECT OF POLYPHENOLS ON DNA METHYLATION-ASSESSED BIOLOGICAL AGE ATTENUATION: THE DIRECT PLUS RANDOMIZED CONTROLLED TRIAL.

Yaskolka Meir, A ; Keller, M ; Hoffmann, A ; et al.  
BMC medicine. 2023;21(1):364

Biological age differs from chronological age and is determined by assessing our DNA. This is known as mAge. A healthy lifestyle and optimal weight have been shown to be of benefit to mAge. The Mediterranean (MED) diet includes ingredients such as vitamins and naturally occurring chemicals, known as polyphenols, which may alter biological age. This randomised control trial of 256 aimed to determine the effects of a MED diet richer in green vegetables and lower in meat (Green-MED) compared to a standard MED diet and recommendations for healthy eating. The results showed that after 18 months of healthy eating and weight loss, none of the diets was able to lower the biological age, however the Green-MED diet and in particular the intake of green tea and the vegetable Mankai were associated with slower biological ageing compared to the other two diets. The polyphenol tyrosol was also associated with slower biological ageing. It was concluded that the diets were unable to reverse biological ageing, but a GreenMed diet rich in polyphenols, may be able to slow it. This study could be used by healthcare professionals to understand that as higher biological age is associated with poorer health outcomes, a diet rich in polyphenols may have additional benefits beyond just weight loss.

## POLYPHENOL SUPPLEMENTATION AND EXECUTIVE FUNCTIONING IN OVERWEIGHT AND OBESE ADULTS AT RISK OF COGNITIVE IMPAIRMENT: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Farag, S ; Tsang, C ; Murphy, PN  
PloS one. 2023;18(5):e0286143  
With Expert Review from Ana-Paula Agrela

### TAKE HOME MESSAGE:

This meta-analysis revealed a non-significant effect of polyphenol supplementation on executive functions among overweight and/or obese populations with a susceptibility to cognitive impairment.

It is recognised that overweight and obesity pose an increased risk for the development of cardiometabolic disease, and increasing evidence indicates a link to cognitive impairment associated with early onset dementia in such populations.

This study's aim was to elaborate on existing knowledge of the effectiveness or otherwise of polyphenols in general to improve executive function (EFs) in an obese/ overweight population at risk of cognitive impairment. This study was a systematic review and meta-analysis of twenty-three randomised controlled trials.

Results showed a nonsignificant effect of polyphenols on EFs. Authors concluded that further research should consider investigating polyphenols supplementation in a younger population at risk of cognitive impairment.



## DIETARY FLAVANOLS RESTORE HIPPOCAMPAL-DEPENDENT MEMORY IN OLDER ADULTS WITH LOWER DIET QUALITY AND LOWER HABITUAL FLAVANOL CONSUMPTION.

Brickman, AM ; Yeung, LK ; Alschuler, DM ; et al.  
Proceedings of the National Academy of Sciences of the United States of America. 2023;120(23):e2216932120

"Cognitive aging" is a term used to describe how some of our cognitive abilities decline during the aging process, independent of late-life cognitive diseases.

The current study was designed to examine the effects of cocoa extract and multivitamin supplementation on total cardiovascular disease and total invasive cancer. For this study, the focus is on the cocoa extract intervention only. Participants were randomly assigned to a 3-year intervention of cocoa extract or a placebo. Results showed that a flavanol intervention-based restoration of memory was observed in the lower tertile of habitual diet quality and in the subset of participants with lower habitual flavanol consumption. The improvement in memory was apparent after 12 months of intervention and appeared to be sustained over the 3 years of follow-up. Additionally, diet quality is a key lifestyle factor linked to the hippocampal and not to the prefrontal component of cognitive aging.

Authors concluded that habitual flavanol consumption and diet quality at baseline are positively and selectively correlated with hippocampal-dependent memory. Improvements in the flavanol biomarker over the trial were associated with improving memory.



## WILD BLUEBERRY (POLY)PHENOLS CAN IMPROVE VASCULAR FUNCTION AND COGNITIVE PERFORMANCE IN HEALTHY OLDER INDIVIDUALS: A DOUBLE-BLIND RANDOMIZED CONTROLLED TRIAL.

Wood, E ; Hein, S ; Mesnage, R ; Fernandes, F ; Abhayaratne, N ; Xu, Y ; Zhang, Z ; Bell, L ; Williams, C ; Rodriguez-Mateos, A  
The American journal of clinical nutrition. 2023;117(6):1306-1319

The risk of developing both cardiovascular and neurodegenerative diseases increases with ageing. Growing evidence from epidemiological and human intervention trials indicates that (poly)phenols may have cardioprotective properties as well as the ability to improve cognitive function. The aim of this study was to investigate the effects of daily wild blueberry (WBB) (poly)phenol consumption on vascular function and cognitive performance in healthy older individuals. This study was a randomised, double-blinded, placebo-controlled parallel design study. A total of 61 healthy older individuals were recruited and randomly assigned to one of the two arms; placebo intervention or blueberry intervention group. Results showed that long-term consumption of a dietary achievable amount of wild blueberry enhanced vascular and cognitive function in older adults. Authors conclude that gut microbiota and vascular blood flow may play important roles in mediating the cognitive benefits shown by the consumption of (poly)phenol-rich foods.

