Cognitive Function Enhanced by Flavonoids?

Study investigates the association between flavonoid intake and cognitive performance.

What Causes Cognitive Impairment?

Cognitive impairments include difficulty remembering, concentrating, learning new things, or making decisions that affect everyday life. Approximately two out of every three adults above 70 years of age experience some level of cognitive impairment.

Both men and women are at a high risk of developing cognitive impairment before death; however, the rate of cognitive dysfunction varies with ethnicity. For example, Black men and women are at a higher risk of experiencing cognitive impairment than White men and women. In addition to ethnicity, various other factors, including education, are related to cognitive impairment.

Few preclinical and clinical studies have shown that a higher intake of flavonoids or foods rich in flavonoid compounds improves cognitive functions. Meta-analyses have shown that flavonoid intake promotes protective neurocognitive benefits across the lifespan.

Comparatively, previous observational and longitudinal studies have reported inconsistent findings regarding the impact of flavonoid intake on cognitive functions. These contradictory results have been attributed to population diversity, diets, and varied cognitive assessment methods.

Most available studies have examined the effects of flavonoids on cognitive ability in White adults with above-average income or education. Therefore, additional studies are needed to understand whether the impact of flavonoid intake varies with race and differential socioeconomic background.

Study

The Healthy Aging in Neighbourhoods of Diversity across the Life Span (HANDLS) study investigates how flavonoids influence cognitive function based on race. To this end, the HANDLS cohort comprised a total of 3,720 urban African American and White adults between 30 and 64 years of age from diverse socioeconomic backgrounds.

The study participants belonged to specific neighborhoods in Baltimore City, Maryland. This prospective cohort study was conducted between August 2004 and March 2009.

All study participants completed the Mini-Mental State Exam (MMSE), which assesses attention, memory, language, orientation, and visuospatial proficiency. Any individual with a MMSE score of less than 24, which indicates cognitive impairment, was excluded from the analysis.

The Trail Making Test (TMT)-A and TMT-B were conducted to assess the participants' neuropsychological condition. The total intake of flavonoids and five flavonoid classes was estimated using the United States Department of Agriculture (USDA) Automated Multiple Pass Method.

Results

At baseline or visit one, a total of 1,947 participants with an average age of 48 years were considered, approximately 42% of whom were male. In this cohort, 31% of White adults and 50% of African American adults lived in poverty.

In some cases, significant inverse associations between dietary intake of flavonoids at visit one and TMT-B scores at visit one were observed for the overall sample and White adults. However, TMT-A scores were inversely associated with anthocyanidin intake at visit one and only for the overall sample. After covariate adjustments, an unanticipated null association between flavonoid intake and TMT-A or TMT-B scores was found.

The mean follow-up of this study was 12.1 years, which was completed at visit five. Most participants were at or close to their cognitive peak at visit five.

The participants' total mean flavonoid intake was significantly lower than current recommendations for flavan-3-ols to prevent cardiovascular disease and diabetes. These participants also reported lower intake of anthocyanidins and flavones than the general U.S. population. Thus, it is possible that total flavonoid intake in the HANDLS study was too low to detect any association with cognitive function.

To date, the underlying mechanism by which flavonoids improve cognitive functions is not fully understood. It has been hypothesized that flavonoids improve cognitive functions by inducing peripheral vascular changes that promote efficient cerebral blood flow. This hypothesis is supported by previous studies revealing that anthocyanidins and their metabolites have neuroprotective actions that lead to reduced neuroinflammation, aggregation of proteins, excitotoxicity, as well as improved axonal health.

Conclusion

The current study highlights the beneficial association between dietary intake of flavonoids and cognitive scores. However, the diet quality and lifestyle of the HANDLS participants were deficient; therefore, the potential benefits of flavonoids could be undermined due to low intake and poor lifestyle measures.

Additional research is needed to better understand the mechanisms through which flavonoids affect neurological functions. In the future, the benefits of consuming a wide range of flavonoids must be assessed in a more diverse population, including individuals with healthier lifestyles and high-quality diets.

Source:

https://www.news-medical.net/news/20240502/Do-flavonoids-enhance-cognitive-function.aspx