

Associations of dietary flavonoids intake with cognitive function: A population-based prospective study in Chinese older adults



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KEY TAKE AWAY
Higher dietary flavonoid intake was associated with better cognitive function in Chinese older adults, with monomers and proanthocyanidins appearing to contribute most notably among flavonoid subclasses.

BACKGROUND
Dietary flavonoids have been associated with cognitive function, yet population-based evidence is still limited. This study aimed to evaluate the association between dietary flavonoid intake and cognitive function among older adults.

METHODS

- Design and participants:** We conducted a prospective study among Chinese adults aged 70 years and older based on the Rugao Longitudinal Aging Study (RLAS, 2021 to 2023).
- Exposure:** Average daily intakes of dietary flavonoids were assessed using a food frequency questionnaire (FFQ) in 2021 and calculated based on flavonoid composition values from the USDA flavonoid database.
- Outcome:** Cognitive function was measured using the Mini-Mental State Examination (MMSE) in 2021 and 2023, and the resulting scores were standardized to z-scores.
- Analysis:** Beta coefficients (β) and 95% confidence intervals (CI) were estimated by linear mixed-effects models to evaluate the associations of energy-adjusted flavonoid intake with cognitive function.

RESULTS				
Table 1. Multivariable-adjusted associations between dietary flavonoids intake and cognitive function in RLAS.				
Variables	Tertile 1	Tertile 2	Tertile 3	P trend
Total flavonoids				
Model 1, β (95% CI)	Ref	0.098 (-0.014, 0.210)	0.186 (0.074, 0.297)	<0.001
Model 2, β (95% CI)	Ref	0.088 (-0.009, 0.185)	0.115 (0.018, 0.212)	0.020
Model 3, β (95% CI)	Ref	0.088 (-0.010, 0.186)	0.121 (0.024, 0.219)	0.013
Flavan-3-ols				
Model 1, β (95% CI)	Ref	0.050 (-0.062, 0.162)	0.184 (0.071, 0.297)	0.106
Model 2, β (95% CI)	Ref	0.061 (-0.036, 0.158)	0.137 (0.039, 0.235)	0.161
Model 3, β (95% CI)	Ref	0.054 (-0.044, 0.151)	0.139 (0.041, 0.237)	0.089
Monomers				
Model 1, β (95% CI)	Ref	0.166 (0.052, 0.280)	0.240 (0.119, 0.361)	<0.001
Model 2, β (95% CI)	Ref	0.116 (0.017, 0.215)	0.160 (0.055, 0.265)	0.004
Model 3, β (95% CI)	Ref	0.112 (0.013, 0.211)	0.160 (0.055, 0.265)	0.002
Polymers				
Model 1, β (95% CI)	Ref	0.142 (0.029, 0.254)	0.178 (0.056, 0.300)	0.031
Model 2, β (95% CI)	Ref	0.092 (-0.006, 0.190)	0.110 (0.004, 0.216)	0.109
Model 3, β (95% CI)	Ref	0.097 (-0.001, 0.195)	0.110 (0.003, 0.216)	0.126
Proanthocyanidins				
Model 1, β (95% CI)	Ref	0.159 (0.046, 0.272)	0.209 (0.088, 0.330)	<0.001
Model 2, β (95% CI)	Ref	0.114 (0.015, 0.212)	0.115 (0.010, 0.221)	0.008
Model 3, β (95% CI)	Ref	0.118 (0.020, 0.217)	0.119 (0.013, 0.225)	0.007
Model 1 was adjusted for age, sex, and total energy intake. Model 2 was further adjusted for BMI, education level, physical activity, smoking status, and alcohol status. Model 3 was further adjusted for hypertension, diabetes, dyslipidemia, and follow-up year.				

- Among **1051** participants (**mean age of 80.3±4.3 years, 49.5% female**), the median daily intake of total flavonoid was **194.6 mg/d (IQR, 104.6-336.6)**.
- The multivariable-adjusted β coefficients (95% CIs) in cognitive function z-score was **0 (ref), 0.088 (95% CI: -0.010, 0.186), and 0.121 (95% CI: 0.024, 0.219)** across increasing tertiles of total flavonoid intake (**P-trend = 0.013**).
- Compared to the lowest tertile, the highest intakes of monomers and proanthocyanidins were associated with better cognitive function, with β values (95% CIs) of **0.160 (0.055-0.265) and 0.119 (0.013-0.225)**.

CONCLUSIONS
The study suggested that higher dietary flavonoid intake was associated with better cognitive performance in Chinese older adults. Further studies are warranted to confirm the study findings and elucidate the underlying biological mechanisms.