

Supplementary Information

Table S1: Effect of flavonoids on cognition by flavonoid source

Flavonoid Source	k	Mean weighted g	95% CI (lower limit, upper limit)	p
Berry	23	0.149	0.038, 0.261	0.009
Citrus	3	0.065	-0.242, 0.371	0.679
Cocoa	11	0.224	0.014, 0.434	0.036
Ginkgo	22	0.187	0.103, 0.271	<0.001
Pine Bark	2	0.011	-0.347, 0.370	0.950
Soya	15	0.054	-0.055, 0.162	0.331
Tea	2	0.093	-0.228, 0.414	0.571
Other	2	0.119	-0.289, 0.527	0.568

Table S2: Effect of flavonoids on cognition by acute or chronic design

Acute or Chronic Study Design	k	Mean weighted g	95% CI (lower limit, upper limit)	p
Acute	31	0.094	-0.002, 0.190	0.055
Chronic	51	0.151	0.081, 0.221	<0.001

Table S3: Effect of flavonoids on cognition by duration of supplementation

Duration of flavonoid supplementation	k	Mean weighted g	95% CI (lower limit, upper limit)	p
≤ 24 hours	31	0.094	-0.002, 0.190	0.055
> 24h ≤ 6 weeks	3	-0.020	-0.367, 0.328	0.912
> 6 weeks ≤ 3 months	31	0.150	0.058, 0.243	0.001
> 3 months	19	0.154	0.040, 0.267	0.008

Table S4: Effect of flavonoids on cognition by participant age group

Age group	k	Mean weighted g	95% CI (lower limit, upper limit)	p
Children	5	0.171	-0.074, 0.416	0.172
Young Adults	24	0.088	-0.018, 0.194	0.105
Middle-aged Adults	22	0.112	0.007, 0.217	0.037

Older Adults	29	0.176	0.074, 0.278	0.001
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Table S5: Effect of flavonoids on cognition by participant cognitive health status

Cognitive Health Status	k	Mean weighted g	95% CI (lower limit, upper limit)	p
Healthy	72	0.103	0.048, 0.158	<0.001
Cognitively Unhealthy	8	0.306	0.143, 0.469	<0.001

Table S6: Effect of flavonoids on cognition by flavonoid dose

Flavonoid Dose	k	Mean weighted g	95% CI (lower limit, upper limit)	p
Low	46	0.094	0.020, 0.168	0.013
Medium	31	0.162	0.092, 0.232	<0.001
High	13	0.100	-0.046, 0.245	0.181

Table S7: Summary of comparative analyses showing between subgroup heterogeneity

Moderator	Q	p
Flavonoid Source	Q(7) = 5.109	0.647
Duration of flavonoid supplementation	Q(3) = 1.604,	0.659
Age group	Q(3) = 1.605	0.658
Cognitive Health Status	Q(1) =5.319	0.021