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Flavonoid intake and survival after diagnosis of colorectal cancer: A prospective study in two US cohorts

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Published: April 01, 2023 • DOI: https://doi.org/10.1016/j.ajcnut.2023.03.026

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Abstract

Background

Although experimental evidence supports anti-cancer effects of flavonoids, the influence of flavonoids intake on colorectal cancer (CRC) survival remains unknown.

Objective

To assess the association of post-diagnostic flavonoid intake with mortality.

Methods

ɔspectively assessed the association of post-diagnostic flavonoid intake with CRC-specific
-cause mortality in 2,552 patients diagnosed with Stage I-III CRC in two coh

the Nurses' Health Study and the Health Professionals Follow-up Study. We assessed the intake of total flavonoids and their subclasses using validated food frequency questionnaires. We used the inverse probability weighted multivariable Cox proportional hazards regression model to calculate the hazard ratio (HR) of mortality after adjusting for pre-diagnostic flavonoid intake and other potential confounders. We performed spline analysis to evaluate dose-response relationships.

Results

31,026 person-years of follow-up, we documented 1,689 deaths, of which 327 were due to CRC. Total flavonoid intake was not associated with mortality, but a higher intake of flavan-3-ols was suggestively associated with lower CRC-specific and all-cause mortality, with multivariable HR (95% confidence interval, CI) per 1-SD increase of 0.83 (0.69-0.99, *P*=.04) and 0.91 (0.84-0.99, *P*=.02), respectively. The spline analysis showed a linear relationship between post-diagnostic flavan-3-ol intake and CRC-specific mortality (*P*=.01 for linearity). As the major contributor to flavan-3-ol intake, tea showed an inverse association with CRC-specific and all-cause mortality, with multivariable HR per 1 cup/day of tea of 0.86 (0.75-0.99, *P*=.03) and 0.90 (0.85-0.95, *P*<.001), respectively. No beneficial associations were found for other flavonoid subclasses.

Conclusions

Higher intake of flavan-3-ol after CRC diagnosis was associated with lower CRC-specific mortality. Small, readily achievable increases in the intake of flavan-3-ol- rich foods, such as tea, may help improve survival in CRC patients.

Keywords

flavonoids • flavan-3-ol • colorectal cancer • tea • survival

ABBREVIATIONS:

AJCC (the American Joint Committee on Cancer), AHEI (Alternate Healthy Eating Index), BMI (body mass index), CI (confidence interval), CRC (colorectal cancer), EGCG (Epigallocatechin gallate), FFQ (food frequency questionnaire), HPFS (Health Professionals Follow-up Study), HR (hazard ratio), IPW (inverse probability weighting), MET (metabolic equivalent), NHS (Nurses' Health Study), PUFA (polyunsaturated fatty acids), SD (standard deviation)

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Article info

Publication history

Accepted: March 28, 2023
Received in revised form: March 27, 2023
Received: November 16, 2022

Publication stage

In Press Accepted Manuscript

Identification

DOI: https://doi.org/10.1016/j.ajcnut.2023.03.026

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