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## Dietary flavonoid intakes are associated with lower risk of NAFLD: a UK biobank study

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Mechanistic studies and short-term randomised trials suggest that higher intakes of dietary flavonoids may protect against non-alcoholic fatty liver disease (NAFLD)<sup>(1–3)</sup>. However, little research has been conducted at a population level, and to date no long term prospective study has assessed the associations between flavonoid intakes and NAFLD risk<sup>(4)</sup>. We aim to perform the first population-based study with long-term follow-up on flavonoid consumption and NAFLD incidence.

In a prospective study, we assessed the associations between flavonoid intakes based on  $\geq 2$  24-hour dietary assessments and NAFLD risk among 121,563 adults aged 40 to 69 years by multivariable regression analyses. Flavonoid intakes were assessed on three levels: a novel flavodiet score (FDS), flavonoid rich foods, and flavonoid subclasses. Cox proportional hazard models were used to assess NAFLD risk, and linear trend tests were used to test for significance. Additional sensitivity analysis was conducted using both a FDS excluding red wine, and non flavonoid containing equivalent foods as negative controls.

Over 10 years of follow-up, 1090 cases of NAFLD were observed. When compared to the lowest Quartile, the highest quartile (Q4) of the Flavodiet Score (FDS) was associated with a 20% lower risk of NAFLD (HR (95%CI): 0.80 (0.66–0.96), P trend = 0.02). Additionally, higher apple intake was associated with a 22% lower risk of NAFLD (HR (95%CI): 0.78 (0.66 - 0.92), P trend = <0.01), while higher tea consumption was associated with a 13% lower risk of NAFLD (HR (95%CI): 0.87 (0.73 - 1.03), P trend = 0.046). Of the flavonoid subclasses, we observed that higher intakes of proanthocyanidins, theaflavins and thearubigins, flavonols and flavan-3-ols were also associated with lower risk.

In a large UK cohort, we demonstrate for the first time that flavonoid-rich diets, containing approximately 6-servings of flavonoid rich food per day, are associated with lower risk of NAFLD. As such, the consumption of flavonoid-rich foods may reduce the risk of NAFLD and its sequelae among middle-aged adults.

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