Caffeine Intake and the Risk of Kidney Stones

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BACKGROUND: Although caffeine intake may increase urine calcium excretion, caffeine-containing beverages have been associated with a lower risk of nephrolithiasis.

OBJECTIVE: We sought to determine the association between caffeine intake and the risk of incident kidney stones in 3 large prospective cohorts.

DESIGN: We prospectively analyzed the association between intake of caffeine and incidence of kidney stones in 3 large ongoing cohort studies, the Health Professionals Follow-Up Study (HPFS) and the Nurses' Health Studies (NHS) I and II. Information on the consumption of caffeine and the incidence of kidney stones was collected by validated questionnaires.

RESULTS: The analysis included 217,883 participants; over a median follow-up of >8 y, 4982 incident cases occurred. After multivariate adjustment for age, BMI, fluid intake, and other factors, participants in the highest quintile of caffeine intake had a 26% (95% CI: 12%, 38%) lower risk of developing stones in the HPFS cohort, a 29% lower risk (95% CI: 15%, 41%) in the NHS I cohort, and a 31% lower risk (95% CI: 18%, 42%) in the NHS II cohort (P-trend < 0.001 for all cohorts). The association remained significant in the subgroup of participants with a low or no intake of caffeinated coffee in the HPFS cohort. Among 6033 participants with 24-h urine data, the intake of caffeine was associated with higher urine volume, calcium, and potassium and with lower urine oxalate and supersaturation for calcium oxalate and uric acid.

CONCLUSION: Caffeine intake is independently associated with a lower risk of incident kidney stones.