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Dietary total antioxidant capacity and incidence of chronic kidney disease in subjects with dysglycemia: Tehran lipid and glucose study

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Background & Aim: Dysglycemia increases the likelihood of chronic kidney disease (CKD) via oxidative stress. The antioxidant-rich diet may attenuate effects of hyperglycemia on oxidative stress. We aimed to investigate the association of dietary total antioxidant capacity (TAC) with incidence of CKD in subjects with dysglycemia.

Material & Method: We followed-up 1179 subjects with dysglycemia from the Tehran lipid and glucose study (TLGS) for 3 years, who were initially free of CKD. Dietary intake of TAC, vitamin C, vitamin E, and β -carotene was assessed through a food-frequency questionnaire at the baseline. Dietary TAC was estimated using the oxygen radical absorbance capacity method. Estimated glomerular filtration rate (eGFR) was calculated, using the modification of diet in renal disease study equation and CKD was defined as eGFR <60mL/min/1.73m². Odds ratios (ORs) using multivariable logistic regression were reported for the association of incident CKD with dietary TAC.

Results: A total of 197 (16.7%) cases of incident CKD were recorded after 3 years of follow-up. After adjustment for age, sex, smoking, physical activity, body mass index, hypertension, and total energy intake, the top tertile of dietary TAC compared to the bottom was associated with 39% (95% confidence interval (CI): 0.61 0.40-0.93) lower risk of incident CKD (P for trend=0.025). Furthermore, the highest tertile of vitamin C intake compared to the lowest, risk of incident CKD was decreased (OR: 0.60; 95% CI: 0.38-0.93, P trend: 0.023). Intake of vitamin E and β -carotene were not significantly associated with incident CKD risk.

Conclusion: Our findings suggest diet high in TAC is associated with a lower risk of incident CKD among subjects with hyperglycemia after 3 years of follow-up.

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