Dietary total antioxidant capacity and incidence of Chronic Kidney Disease in subjects with Dysglycemia: Tehran lipid and Glucose study

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Abstract

Purpose: Dysglycemia upsurges the probability of chronic kidney disease (CKD) via oxidative pressure. The antioxidant-rich diet may attenuate effects of hyperglycemia on oxidative stress. We aimed to research the association of dietary total antioxidant capacity (TAC) with incidence of CKD in subjects with dysglycemia.

Chronic kidney disease (CKD) could also be a serious public unhealthiness with an increasing incidence and prevalence. A recent study showed that the prevalence of CKD stages 3–5 was 11.6% during a population of Iranian adults. it is a posh disease, with progressive impairment of glomerular function that's usually irreversible and associated with increased morbidity and mortality.

DM could also be a known major explanation for CKD, accounting for nearly 44% of latest cases. Recent evidence within the last decade shows that the prevalence of CKD has increased simultaneously thereupon of diabetes among the American population. Age, gender, race, and genetics are the non-modifiable, while lifestyle, sign , and glycemia are the modifiable factors within the event of nephropathy in diabetic patients.

Substantial & Technique: We followed-up 1179 topics through dysglycemia from the Tehran lipid and glucose study (TLGS) for 3 years, who were initially free of CKD. Nutritional consumption of TAC, vitamin C, vitamin E, and ß-carotene was evaluated from side to side a food-frequency questionnaire at the baseline.

Dietary TAC was expected by means of the oxygen thorough 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.

Dietary intake was assessed by expert interviewers, employing a 168-item food-frequency questionnaire (FFQ), the reliability and validity of which are previously reported. Overall, these data indicate that the FFQ provides reasonably valid measures of the typical long-term dietary intake.

Trained dieticians during face-to-face interviews asked participants to designate their consumption frequency for every food item consumed during the previous year on a daily, weekly, or monthly basis. Portion sizes of consumed foods that were reported in household measures were then converted to grams. Because the Iranian Food Composition Table (FCT) is incomplete, the USDA Food Composition Table (FCT) was used, and for the normal Iranian foods ex-directory within the USDA FCT, the Iranian FCT was the alternative; its validity and reliability are reported elsewhere.

Briefly, to review the reliability of the FFQ, 132 subjects (61 men and 71 women) completed a 168-item FFQ (FFQ1 and FFQ2), twice with a 14-month interval between FFQ1 and FFQ2, besides to evaluate the rationality, 12 dietary recalls (DRs) were collected (1 each month) over the 1-year interval. Age- and energy-adjusted and attenuated Spearman correlation coefficients wont to assess validity of the FFQ for nutrients intake were 0.53 and 0.39 in men and ladies , respectively; ge- and energy-adjusted intra class correlation coefficients, which reflect the reliability of nutrient intake within the FFQ, were 0.59 and 0.60 in men and in women, respectively.

Dietary TAC was calculated by Nutrient Data Laboratory of USDA Database; which estimated TAC using the oxygen radical absorbance capacity (ORAC) method for selected foods, and expressed it as mmol of Trolox Equivalents (mmol TE/day).

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Statistical analysis

All data were analyzed using the Statistical Package for the Social Sciences program (SPSS) (version 15.0; SPSS Inc, Chicago IL) and P values were considered statistically significant. Dietary TAC was categorized into the terile cut-off points and therefore the median for every was 16.1, 24.2, and 34.8. Vitamin C and vitamin E were expressed in mg day, and β-carotene in μg/day, all of which were divided into the tertiles. Continuous variables were reported because the mean standard deviation (SD) and categorical variables as percentages.

We calculated age-adjusted mean values for participants' characteristics using analysis of covariance (ANCOVA). Tests of a trend for continuous and categorical variables across tertiles of the dietary TAC (as a median in each tertile) were conducted using linear regress sion and logistic regression tests, respectively.

Results: a complete 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 highest fertile of dietary TAC compared to rock bottom was related to 39% (95% confidence interval (CI): 0.61 0.40-0.93) lower risk of incident CKD (P for trend=0.025). Furthermore, the very best fertile of vitamin C intake compared to rock bottom, risk of incident CKD was decreased (OR: 0.60; 95% CI: 0.38-0.93, P trend: 0.023). Intake of vitamin E and ß-carotene weren't significantly related to incident CKD risk.

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

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