

Diabetologia. 2017 Feb;60(2):270-279.

**Diet-dependent acid load and type 2 diabetes: pooled results from three prospective cohort studies.**

Kieft-de Jong JC, Li Y4, Chen M, Curhan GC, Mattei J, Malik VS, Forman JP, Franco OH, Hu FB

**AIMS/HYPOTHESIS:**

Studies suggest a potential link between low-grade metabolic acidosis and type 2 diabetes. A western dietary pattern increases daily acid load but the association between diet-dependent acid load and type 2 diabetes is still unclear. This study aimed to assess whether diet-dependent acid load is associated with the risk of type 2 diabetes.

**METHODS:**

We examined the association between energy-adjusted net endogenous acid production (NEAP), potential renal acid load (PRAL) and animal protein-to-potassium ratio (A:P) on incident type 2 diabetes in 67,433 women from the Nurses' Health Study, 84,310 women from the Nurses' Health Study II and 35,743 men from the Health Professionals' Follow-up Study who were free from type 2 diabetes, cardiovascular disease and cancer at baseline. Study-specific HRs were estimated using Cox proportional hazards models with time-varying covariates and were pooled using a random effects meta-analysis.

**RESULTS:**

We documented 15,305 cases of type 2 diabetes during 4,025,131 person-years of follow-up. After adjustment for diabetes risk factors, dietary NEAP, PRAL and A:P were positively associated with type 2 diabetes (pooled HR [95% CI] for highest (Q5) vs lowest quintile (Q1): 1.29 [1.22, 1.37], p trend <0.0001; 1.29 [1.22, 1.36], p trend <0.0001 and 1.32 [1.24, 1.40], p trend <0.0001 for NEAP, PRAL and A:P, respectively). These results were not fully explained by other dietary factors including glycaemic load and dietary quality (HR [95% CI] for Q5 vs Q1: 1.21 [1.09, 1.33], p trend <0.0001; 1.19 [1.08, 1.30] and 1.26 [1.17, 1.36], p trend <0.0001 for NEAP, PRAL and A:P, respectively).

**CONCLUSIONS/INTERPRETATION:**

This study suggests that higher diet-dependent acid load is associated with an increased risk of type 2 diabetes. This association is not fully explained by diabetes risk factors and overall diet quality.