Meal composition affects risk markers for kidney disease differently in type 2 diabetes and healthy subjects

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Background/aims: Oxidative stress and inflammation play a role in development of diabetic kidney disease. Postprandial hyperglycemia and hyperlipidemia are speculated to be associated with increased oxidative stress and inflammation. The aim was to examine the effect of meal composition on postprandial risk markers for kidney disease among those with type 2 diabetes (T2D) and healthy subject (HS).
Material/methods: On four different occasions 21 patients with T2D and 21 HS ingested an isocaloric lunch (600 kcal) with different compositions of carbohydrate (CH) (54%), CH & fibers (15 g), fat (50%) and protein (40%). Blood samples were taken and urine samples collected before and up to four hour after the meal. B-glucose, insulin, triglycerides, CRP, IL-6, IL-18, and urine IgG2, IgG4 and albumin/creatinine ratio (ACR) were analyzed. Statistical method: repeated measure ANOVA and area under the curve (AUC).
Results: T2D subjects had a mean age (±SD) of 63 (4) years while HS had a mean age of 52 (16), p=0.004, and T2D subjects had higher BMI (29 vs 24 kg/m2, p<0.001). There were postprandial differences between the meals for glucose and triglycerides for both groups, all p<0.05. High CH meals resulted in greater AUC of glucose, while high fat meal gave higher peaks of triglycerides. Both groups had an overall increase in IL-6 for all meals, with no difference between meals. IL-18 decreased after CH meal only in HS, p=0.003. Urine IgG2 and IgG4 responses were different between the groups after CH-meal (p=0.02). CRP, urine ACR, urine IgG2 & IgG4 was not affected by meal composition within the groups.
Conclusion: CH meal showed higher glucose and fat rich meal higher triglyceride levels suggesting risk for oxidative stress in T2D. However, inflammatory markers (CRP, IL-6, IL-18), urine albumin excretion, IgG2 & IgG4 were not significantly modulated by meal composition in this population.