We conducted a randomized, placebo-controlled, double-blinded, cross-over trial enrolling 30 patients with T1D and a plasma uric acid (UA) ≥ 4.4 mg/dL, persistent albuminuria (urinary albumin creatinine ratio) ≥30 mg/g and an eGFR ≥ 40 ml/min/1.73m^2. The participants were randomized to: (1) Allopurinol (400 mg daily) + standard therapy; or (2) placebo + standard therapy for 60 days. Participants underwent a 4 week washout period prior to cross-over. Primary end-point was change in UAER (three 24h collections), secondary endpoint was change in GFR (^{51}Cr-EDTA-plasma clearance) measured at the end of each treatment period. The effect of UA lowering was tested using a paired t-test, after testing for carryover effects.

Mean (SD) baseline blood pressure was 133(3)/75(2) mmHg and HbA1c 67(3) mmol/mol. UA decreased to 3.6 (1.2) mg/dl with allopurinol compared to 5.8 (1.5) with placebo (p<0.001). The 24h UAER (geometric mean (IQR)) was 221 (131-367) mg/24h after treatment with allopurinol and 228 (151-344) mg/24h with placebo (p=0.83). Mean (SD) GFR (^{51}Cr-EDTA) was 74 (20) ml/min/1.73m^2 after allopurinol treatment compared with 73 (20) ml/min/1.73m^2 after placebo (p=0.51). Glycemic control, 24h-blood pressure and RAS blockade were stable. We found no significant association (p=0.45) between uric acid and UAER. In an unadjusted linear model, UA was significantly associated with the level of GFR (^{51}Cr-EDTA) in the placebo treatment period (R^2=0.2, p=0.017).

In conclusion short-term UA lowering by allopurinol did not improve UAER or GFR in patients with T1D and nephropathy.