

P0922 **A LOW AROMATIC AMINO-ACID DIET IMPROVES RENAL FUNCTION AND PREVENTS KIDNEY FIBROSIS IN MICE WITH CHRONIC KIDNEY DISEASE**

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Background and Aims: Despite decades of use of low protein diets (LPD) in the management of chronic kidney disease (CKD), the mechanisms through which it delays the progression to end-stage renal disease (ESRD) remain controversial. A reduced production of uremic toxins could contribute to the benefits of the LPD. Aromatic amino-acids are precursors of major uremic toxins such as p-cresyl sulfate (PCS), indoxyl sulfate (IS), indole-3-acetic acid or phenol. We investigated the hypothesis that a low aromatic amino acid diet (LAA, namely low intake of tyrosine, tryptophan and phenylalanine) while being normoproteic, could be as effective as a LPD, through the specific diminution of uremic toxins production.

Method: Renal failure was chemically induced in mice with a diet containing 0.25% (w/w) of adenine. Thereafter, they received 3 different diets for 6 weeks: normoproteic diet (NPD: 14.7% proteins, aromatics 0.019%), LPD (5% proteins, aromatics 0.007%) and LAA (14% proteins, aromatics 0.007%).

Results: LAA and LPD had no significant effect on body weight. Plasma creatinine was significantly lower in LPD and LAA groups compared to NPD group (72 ± 4 and $73 \pm 4 \mu\text{mol/L}$ vs $127 \pm 6 \mu\text{mol/L}$, $p < 0.0001$), as well as proteinuria (1.3 ± 0.3 and $1.2 \pm 0.1 \text{ mg/24h}$ vs $3.8 \pm 0.9 \text{ mg/24h}$, $p < 0.05$). Kidney fibrosis was more severe in NPD group vs LPD and LAA groups ($17 \pm 1\%$ vs $10 \pm 1\%$ and $13 \pm 2\%$, $p < 0.0001$ and $p = 0.01$). Kidney inflammation was also reduced with LPD and LAA. Free PCS and IS were lower in LPD and LAA groups compared to NPD group.

Conclusion: These results suggest that LAA confers similar benefits as compared with those of LPD to delay the progression of CKD through reduction of uremic toxins production, with lower risk of malnutrition.

Renal function and urinary protein excretion in control and CKD mice

Serum creatinine (A), blood urea nitrogen (B) and urinary proteins (C) in control and CKD mice fed with normoproteic diet (NPD), low protein diet (LPD) or low aromatic amino-acid diet (LAA). Data are expressed as mean \pm SEM for $n = 5-11$ animals in each group.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ vs CKD-NPD; (two-way ANOVA and Dunnett post hoc test).

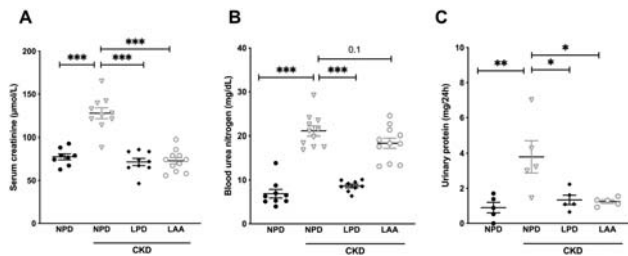


Figure: