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Theme : Dialysis Adequacy and Residual Renal Function

## **Glucose Degradation Products (GDPs) in PD Fluids Predict Decline of Residual Renal Function (RRF)**

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RRF strongly affects mortality, morbidity, blood pressure and fluid control in PD patients. Considerable amounts of toxic GDPs (reactive carbonyl compounds) are formed during heat sterilisation of conventional PD fluids. It was recently shown that (i) during dwell GDPs are transported from the peritoneal cavity into the circulation, (ii) they may exert negative effects through direct tissue damage or via formation of advanced glycation end products and (iii) the most bioreactive GDP, 3,4-dideoxyglucosone-3-ene (3,4-DGE), promotes renal cell apoptosis. The aim of this prospective, controlled, parallel, multicenter study was to investigate the effect of GDPs on RRF in PD patients, randomly assigned to 18 months treatment with Gambrosol trio® (3,4-DGE < 1 µM) or conventional fluids (3,4-DGE 13-20 µM). RRF was measured every 4-6 weeks as the mean of renal urea and creatinine clearance. For various reasons not related to the study, data from 69 out of 80 randomised patients were eligible. 43 patients on Gambrosol trio® and 26 on conventional fluids contributed data on RRF according to their time in the study. Groups were not statistically different in angiotensin receptor blocker (ARB) medication (16 vs. 31%), start RRF ( $6.7 \pm 3.1$  vs  $6.2 \pm 2.4$  mL/min/1.73m<sup>2</sup>), age ( $52 \pm 12$  vs.  $54 \pm 15$  years), diabetes (20.9% vs. 19.2%), gender (26 vs. 14 m) and time on PD ( $9 \pm 13$  vs.  $5 \pm 10$  months), but in ACE inhibitor medication (70 vs. 42%). The repeated measures model (heterogeneous compound symmetry) adjusted for age, diabetes, gender, ARBs, ACE inhibitors, time on therapy and potential interactions, provides significant evidence that monthly RRF decline was lower with Gambrosol trio® compared to conventional fluids (1.5% vs. 4.3%,  $p = 0.0437$ ). The present prospective clinical study shows that PD fluid with minimized GDP level has a protective effect on residual renal function in PD patients.