

Under PIO, insulin sensitivity improved, as assessed by increased total glucose disposal rate ( $1.98 \pm 0.24$  for PIO versus  $1.58 \pm 0.12$   $\mu\text{mol/kg/min}$  for PL,  $p < 0.05$ ), and reduced glucose endogenous hepatic production. PIO did not affect post-dialysis body weight, total fat and lean body mass, but significantly reduced visceral adipose tissue (VAT) area and the VAT/SAT (subcutaneous adipose tissue) ratio. HDL-cholesterol significantly increased. PIO decreased CRP ( $3.96 \pm 1.44$  mg/l vs  $7.88 \pm 2.56$ ,  $p < 0.05$ ), plasma leptin, and dramatically reduced leptin/adiponectin ratio. Glycerol turnover, circulating glycerol and non esterified fatty acids were paradoxically increased. In conclusion, the improvement in insulin sensitivity by PIO, in non diabetic dialyzed patients, was associated with favorable metabolic effects, reduction in inflammation and body fat redistribution. The stimulation of systemic lipolysis was a surprising finding which may reflect adipose tissue remodeling and/or a paradoxical lipolytic effect of PIO in this population.

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### QUANTIFICATION OF THE DIFFERENCE BETWEEN PRE-DIALYSIS AND POST-DIALYSIS SERUM ALBUMIN MEASUREMENT AND ITS RELATIONSHIP TO INTRA-DIALYTIC WEIGHT GAIN

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Haemodialysis patients may have low albumin levels due to a cascade of factors, including inflammation and reduced dietary intake. Albumin is commonly used in clinical settings by dieticians as part of a comprehensive nutritional assessment. Presently many dietetic practitioners use interchangeably pre-dialysis and post-dialysis biochemical measurements for albumin. The aim of this study was to quantify the difference between pre-dialysis and post-dialysis serum albumin measurement and its relationship to intra-dialytic weight gain. Forty-six stable (21 Australian indigenous, 25 non-indigenous) haemodialysis patients were enrolled in a three month cross-sectional study. During the study patients underwent routine haemodialysis treatment and biochemical tests. Weight and biochemical measurements were collected pre and post dialysis on the first Tuesday or Wednesday of each month. A patient generated subjective global assessment (PG-SGA) was conducted in the third month of the study. The incidence of low albumin levels ( $< 35\text{g/L}$ ) was 56% ( $n = 26$ ) when serum albumin was measured pre-dialysis, this was reduced to 30% ( $n = 14$ ) when measured post-dialysis. Analysis of serum albumin found a  $2.6\text{g/L}$  (CI 1.7-3.5) difference in concentration between pre and post dialysis measurements ( $p = 0.000$ ), with serum albumin less concentrated in pre-dialysis blood samples. Intra-dialytic weight gain ( $2.0\text{kg}$ , CI 1.7-2.3) correlated with the change in serum albumin ( $r = 0.464$ ,  $p = 0.001$ ). Intra-dialytic weight gain and the difference between pre and post dialysis serum albumin was greater in Australian indigenous patients than in non-indigenous patients. PG-SGA score was more strongly correlated with post-dialysis than pre-dialysis serum albumin ( $r = 0.430$ ,  $p = 0.003$ ;  $r = 0.389$ ,  $p = 0.008$  respectively). This study indicates that measurement of serum albumin should be undertaken post-dialysis when using the measurement as part of a nutritional assessment. Pre-dialysis serum albumin measurement may falsely indicate poor nutritional status, and should be followed with a post-dialysis measurement to confirm finding.

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### DIFFERENCES BETWEEN AUSTRALIAN INDIGENOUS AND NON-INDIGENOUS MAINTENANCE HEMODIALYSIS PATIENTS

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Indigenous Australians have an increased incidence of kidney disease and decreased survival on hemodialysis. The aim of this study was to investigate whether differences in nutritional status exist between indigenous and non-indigenous patients undergoing maintenance hemodialysis in South Australia.

Seventy-two (22 Australian indigenous, 50 non-indigenous) stable hemodialysis patients were enrolled in a three month cross-sectional

study. During the study patients underwent routine hemodialysis treatment and biochemical tests. Weight and biochemical measurements were collected pre and post dialysis on the first Tuesday or Wednesday of each month. A patient generated subjective global assessment (PG-SGA) was conducted in the third month of the study.

Pre-dialysis albumin was  $32.8 \pm 4.1\text{g/L}$  in Australian indigenous patients and  $36.2 \pm 4.5\text{g/L}$  in non-indigenous patients ( $p = 0.003$ ). The difference between pre-dialysis and post-dialysis albumin was  $-4.0 \pm 2.8\text{g/L}$  in indigenous patients and  $-1.0 \pm 1.9\text{g/L}$  in non-indigenous patients ( $p = 0.000$ ). Intra-dialytic weight gain was  $3.0 \pm 2.6\text{kg}$  in indigenous patients and  $2.0 \pm 0.8\text{kg}$  in non-indigenous patients ( $p = 0.010$ ). Serum sodium and bicarbonate were  $136.2 \pm 2.7\text{mmol/L}$  and  $22.3 \pm 1.7\text{mmol/L}$  in indigenous patients and  $138.5 \pm 2.3\text{mmol/L}$  and  $25.2 \pm 5.8\text{mmol/L}$  in non-indigenous patients ( $p = 0.010, 0.003$ ). Glucose, HbA1c and triglyceride were  $9.7 \pm 4.6\text{mmol/L}$ ,  $7.0 \pm 1.7\%$  and  $2.2 \pm 1.3\text{mmol/L}$  in indigenous patients and  $7.0 \pm 2.8\text{mmol/L}$ ,  $6.2 \pm 1.0\%$  and  $1.4 \pm 0.7\text{mmol/L}$  in non-indigenous patients ( $p = 0.005, 0.047, 0.016$ ). No differences were observed in dry weight, PG-SGA, post-dialysis albumin, serum potassium, urea, creatinine, parathyroid hormone, phosphate, calcium, C-reactive protein or hemoglobin.

This study indicates that differences exist between Australian indigenous and non-indigenous maintenance hemodialysis patients, with indigenous patients less likely to be meeting recommendations.

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### GUANIDINOACETIC ACID(GAA) IN PATIENTS WITH CHRONIC KIDNEY DISEASE(CKD) AND DIABETES MELLITUS(DM)

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GAA is the precursor of creatine, an essential in the energy metabolism of muscle and nerve tissue. GAA is mainly produced in the kidney. GAA production was reported to be suppressed in the streptozotocin-induced DM rats. However, GAA metabolism has not been really investigated in CKD or DM patients. In this study, we determined serum level(S) and urinary excretion(U) of GAA and creatinine(Cr) in patients with chronic glomerulonephritis (CGN) and DM. The subjects were 15 healthy adults, 92 patients with CGN and 27 patients with non insulin-dependent DM nephropathy. S and U-GAA were determined with HPLC. As shown in the Table describing mean values, U-GAA of early stage CKD patients was significantly lower than healthy subject. And S-GAA decreased with loss of renal function or with U-Cr, especially in DM patients.

	N	S-Cr (mg/dL)	U-Cr (mg/day)	S-GAA ( $\mu\text{g/dL}$ )	U-GAA (mg/day)
Normal	15	0.9	1633	38.2	103.0
CGN(Ccr > 90mL/min)	12	1	1742	41.1	41.3*
CGN(Ccr < 90mL/min)	24	1.5*	1385*	37.7	39.2*
CGN(Ccr < 30mL/min)	56	7.1*	715*	24.4*	5.9*
DM(Ccr > 60mL/min)	16	0.9	775*	27.8*	46.2*
DM(Ccr < 60mL/min)	11	5.0*	581*	22.1*	2.3*

In conclusion, GAA production in the kidney decreased in CKD patients, suggesting GAA deficiency was a reason of muscle wasting of CKD and DM patients.

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### EFFECTS OF GUANIDINOACETIC ACID(GAA) SUPPLEMENTATION IN RATS WITH CHRONIC RENAL FAILURE(CRF)

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GAA is the precursor of creatine(CRT), an essential in the energy metabolism of muscle and nerve tissue. GAA is mainly produced in the kidney. We reported the GAA deficiency in CRF patients. This study was designed to assess the effects of GAA supplementation(10 mg,100 mg/day orally for 4 weeks respectively) for the muscle capabilities in CRF rats prepared by 5/6 nephrectomy. Muscle power was assessed by the sliding