

PLASMA AMINO ACID PROFILES IN HAEMODIALYSIS PATIENTS
BEFORE AND AFTER ENERGY SUPPLEMENTATION USING GLUCOSE POLYMER

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The plasma amino acid profiles in patients with chronic renal failure undergoing haemodialysis (HD) are abnormal and are characterised by low concentrations of the branched-chain amino acids, histidine, tryptophan and threonine. Levels of urea cycle intermediates and glutamate are elevated (Gulyassy et al. 1968). Some of these abnormalities are similar to those found in protein energy malnutrition and it is documented that many patients undergoing regular haemodialysis exhibit features of malnutrition (Allman et al. 1986). However, other factors such as impaired renal synthesis and degradation are implicated. Thus we investigated the effect of increasing energy intakes, thereby improving nutritional state, on the abnormalities of these patients' plasma aminograms.

Ten HD patients were randomly allocated to receive either a glucose polymer supplement (S) (100 or 150 g/day) or no supplement. Pre-dialysis fasting blood samples were collected before commencing the glucose polymer and again at the end of six months of supplementation. In addition, samples were collected from 12 healthy normal people. Plasma amino acid determinations were made using high performance liquid chromatography.

Amino acid $\mu\text{mol/l}$	Ile	Leu	Val	His	Lys	Met	Phe	Thr	Trp		
Normals (n=12)	65	125	230	188	179	23	52	275	50		
HD pre-S (n=5)	67	110	174#	126#	138	22	61	131	16#		
HD post-S (n=5)	64	116	191	99	139	23	63	121	26##		
	Ala	Arg	Asn	Cit	Cys	Gln	Glu	Gly	Orn	Ser	Tyr
	375	86	64	17	67	831	33	210	49	142	66
	294	95	32#	98#	88	674	80#	326#	61#	72#	51
	349	78	34	73	79	571	97	334	61	75	49

Normals vs. HD $P < 0.01$ ## HD pre-S vs. HD post-S $P < 0.05$

The HD patients had elevated levels of glutamic acid, glycine, citrulline and ornithine and low levels of serine, asparagine, valine, tryptophan and histidine. After six months of supplementation only the levels of tryptophan showed a change towards normal levels. As no changes occurred for the non-supplemented group, their results have not been included.

It is apparent that the abnormalities of the plasma amino acids of HD patients are dependent on many factors other than nutritional status.

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