SERUM TRACE ELEMENTS IN PATIENTS WITH UNTREATED EPILEPSY: A PRELIMINARY STUDY

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Trace elements play an important role in a wide variety of metabolic processes, including those with a bearing on neuronal function. A recent study from England* has shown significantly higher serum concentrations of aluminium (Al), strontium (Sr) and zinc (Zn), and lower concentrations of cobalt (Co) and manganese (Mn) in a group of 19 patients with untreated epilepsy compared with a control group of 20 subjects. The present study investigates, for the first time, the serum trace-element status of patients with epilepsy in a tropical country where the trace-element metabolism as well as the aetiopathology of epilepsy are considerably different to those in a temperate country.

Serum Zn, Mg and Ca concentrations were estimated using atomic absorption spectrometry, and serum Al, Sr, Cu and Fe using inductively coupled plasma spectrometry in 15 patients with untreated epilepsy (primary generalized - 9, partial - 6) and 17 control subjects. The results are given in the table.

	Epilepsy		Control		P	R^2
	mean (μg/ml)	SD	mean (μg/ml)	SD		
Zn	4.290	3.364	3.297	1.657	0.314	0.036
Ca	133.507	57.242	174.776	44.155	0.028	0.150
Mg	32.666	5.444	29.555	4.404	0.084	0.096
Sr	0.159	0.033	0.129	0.018	0.004	0.250
Cu	1.788	1.868	1.436	0.603	0.309	0.018
Al	2.507	2.378	1.773	1.591	0.307	0.038
Fe	3.667	2.118	1.989	0.449	0.003	0.260

*Davidson, D.L.W.; Ward, N.I. 1988. Abnormal aluminium, cobalt, manganese, strontium and zinc concentrations in untreated epilepsy. *Epilepsy Research 2*:323–330.

Serum Sr and Fe were significantly higher ($P < 0.05$), and Ca lower in the epilepsy group compared with the control group, but the significance of epilepsy in the interpretation of these results is not clear at this stage. The study involves a large number of epilepsy patients and control subjects; and several more trace elements, including Co and Mn, are being investigated.