

## EVIDENCE OF MALNUTRITION IN ABORIGINAL CHILDREN AT YALATA

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Studies in NSW (Kamien et al. 1974) and in the Kimberley region of north Western Australia (Smith et al. 1982, Cheek et al. 1985) have shown evidence of significant growth retardation along with mineral and vitamin deficiency in aboriginal children aged 6 to 13.5 years in such settlements and communities. Evidence of protein and/or energy malnutrition has also been present. In the preschool years bowel and respiratory infection are constant.

More recently we have investigated children in aboriginal settlements in the semidesert regions of Yalata in western South Australia and at Nepabunna and Marree in northern South Australia. Twenty six children from Yalata and 29 at Nepabunna were studied, the geographical conditions of both settlements being similar, but the health outcomes were different. These groups were also compared for clinical chemistry with caucasian age/sex matched groups from a regional school (Hawker). Blood samples were collected into heparinised containers, centrifuged and the plasma samples stored frozen until assay. Total body water was assessed using an oral deuterated water load one hour before blood sampling. Plasma zinc and copper were determined by atomic absorption spectroscopy, plasma concentrations of iron, transferrin, folic acid and vitamin B<sub>12</sub> were assayed by commercial kits and other vitamins by HPLC assay.

There were reductions in both height and weight of the Yalata children, more than half of the population being less than the 5th percentile. None of the Nepabunna children were so affected. There was a significant reduction in intracellular water, which is a useful index of both cell mass and protein reserves. Mean plasma albumin concentrations (g/l) also showed a significant reduction ( $P < 0.05$ ) in Yalata children ( $41.0 \pm 0.6$  SEM) relative to Nepabunna children ( $43.3 \pm 0.7$ ). There was a significantly lower plasma zinc (-32%,  $P < 0.001$ ) iron (-24%  $P < 0.01$ ) alpha tocopherol and vitamin A (Retinol) (both -19%  $P < 0.05$ ), while B-carotene was grossly depleted (-68%  $P < 0.001$ ) in Yalata children relative to Nepabunna and caucasian groups. Plasma concentrations of vitamin B<sub>12</sub> and folate were not significantly different. Along with the lowered iron concentration there was reduced transferrin saturation (-10%  $P < 0.001$ ) and increased iron binding capacity (+33%,  $P < 0.001$ ). Observations on parasitism showed that whereas there was no evidence of hookworm in these communities *Giardia lamblia* was prevalent in the Yalata community but virtually absent in the Nepabunna community. Giardiasis is a disease capable of causing an insidious malabsorption and malnutrition problem in communities with poor hygiene (Solomons 1982). Further observations are required in these communities to characterise the respective contributions of malnutrition and infective disease to the health problems observed. A suitable remedy probably involves both nutrition supplements and hygiene measures.

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