This is the published version:


Available from Deakin Research Online:

http://hdl.handle.net/10536/DRO/DU:30045246

Reproduced with the kind permission of the copyright owner.

Copyright: 2006, HEC Press
Concurrent Session 6: Evidence Based Nutrition

Zinc status of toddlers at baseline of a randomised-controlled diet intervention trial
EJ Morgan¹, EL Ferguson¹, A-LM Heath¹, AR Gray², EA Szymlek-Gay¹, K Bailey¹, RS Gibson¹

¹ Dept of Human Nutrition, University of Otago, Dunedin
² Dept of Social and Preventive Medicine, University of Otago, Dunedin

Background – There is evidence to suggest that mild zinc deficiency may be present in New Zealand (NZ) children. Toddlers may be at an increased risk of zinc deficiency due to their high zinc requirements for growth and low intakes of meat, which is a highly bioavailable source of dietary zinc.

Objectives – To examine the baseline zinc status of 12-20 month old South Island NZ children who participated in a randomised controlled trial designed to determine the efficacy of a meat-based or a fortified cow’s milk-based dietary intervention on biochemical zinc status.

Design – A 20-week randomised-controlled intervention trial was conducted with each of 225 toddlers randomised into one of the two diet groups or the control group. At baseline, a hair and non-fasting serum sample were collected using trace-element free techniques for zinc analysis by flame atomic absorption spectrophotometry. Dietary intakes were assessed via a three-day weighed food record. Trained anthropometrists measured weight and length.

Outcomes – At baseline, the toddlers in this study had a mean (SD) age of 17.1 (2.8) months and 56.4% (n=127) were boys. Mean Z-scores (SD) for length-for-age were 0.14 (1.13) and for BMI-for-age were 0.77 (1.04) (n=225). Mean (SD) dietary zinc intake was 4.8mg/day (1.2; n=224), with 1.6% estimated to be at risk of inadequate zinc intakes. Mean serum zinc concentration at baseline was 9.8 μmol/L (n=183) with 38.3% of toddlers classified as having a low serum zinc concentration using time-of-day specific cut-offs. The mean hair zinc concentration at baseline was 1.83 μmol/g (n=215), with 31.6% of toddlers found to have a low hair zinc concentration using season-specific cut-offs.

Conclusions – Baseline results suggest the existence of mild zinc deficiency in these NZ toddlers, which may be related to low dietary intakes of zinc.