Effects of red meat or iron-fortified milk on iron status of 12–20 month old New Zealand (NZ) children: a randomized controlled trial

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ABSTRACT

We assessed the efficacy of increased intake of red meat or the use of an iron–fortified milk on the iron status of healthy non–anemic 12–20 month old NZ children. In a 20–week partial double–blind randomised placebo–controlled intervention trial toddlers (n=225) were assigned to one of three groups: ‘Meat’ –addition of ~ 0.5 mg of absorbable iron from red meat dishes/day (n=90), ‘Toddler Milk’–toddler’s regular milk replaced with iron–fortified (1.55 mg iron/100 mL) commercial Toddler Milk (n=45), or ‘Placebo’ – toddler’s regular milk replaced with unfortified (0.02 mg iron/100 mL) commercial cow’s milk (n=90). Non–fasting venipuncture blood samples were collected at baseline and 20 weeks for hemoglobin, serum ferritin (SF), transferrin receptor, and C–reactive protein. There was a positive change in adjusted SF [mean (95%CI)] over 20 weeks that was 68% (27%, 124%) greater in the Toddler Milk than in the Placebo group and 29% (2%, 63%) greater in the Meat than in the Placebo group (Meat: +10%, Toddler Milk: +44%). Despite no significant difference in change in SF between the Toddler Milk and Meat group, change in SF tended to be greater (P=0.07) for the Toddler Milk group. There were no intervention effects on hemoglobin or serum transferrin receptor concentration. Consumption of commercial iron–fortified Toddler Milk appears to improve iron stores in toddlers. Increased intakes of red meat can prevent a fall in serum ferritin.

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