TWO LEVELS OF IRON SUPPLEMENTATION AND DEVELOPMENTAL OUTCOME, IRON NUTRITION, AND ADVERSE RESULTS IN LOW BIRTH WEIGHT INFANTS

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Conflicting opinions exist over the optimal amount of iron that low birth weight infants (LBW <2,500g birth weight) should receive. To investigate the effect of increased dietary iron intakes we randomly assigned 58 infants at $2,000 \pm 100$ gm study entry to receive either a premature formula with 12mg iron/L (*iron*) or 21 mg/L (*high iron*) for a period of one year. Birth weight (*high iron* $1,432 \pm 390$; *iron* $1,491 \pm 339$ g) and gestational age (*high iron* (32 ± 2) ; *iron* 32 ± 3 wks) did not differ between groups. At baseline, hospital discharge, 3, 6, 9 and 12 months corrected age, the following measurements were completed: weight, infection rate; RBC hemoglobin (HGB), catalase, hydrogen peroxide fragility (H_2O_2) and superoxide dismutase (in progress); plasma malondialdehyde (MDA), ferritin, transferrin, zinc and copper; Griffiths Mental Development Scales (GMD) and 3 day diet records. There were no differences at any time for weight, catalase, MDA, H_2O_2 or GMD. HGB (*High iron* 123 ± 9 ; *iron* 118 ± 8) showed a trend at 3 months ($p = 0.07$). Ferritin (*High iron* 17 ± 8 ; *iron* 12 ± 5) was greater in the *high iron* group at 6 months. Transferrin was greater in the *high iron* group at 3 months (*High iron* 320 ± 32 ; *iron* 297 ± 43). Plasma zinc (*High iron* 71 ± 13 ; *iron* 94 ± 26) and plasma copper (*High iron* 107 ± 24 ; *iron* 131 ± 29 ; $P < 0.05$) at 12 months indicated possible inhibition of zinc and copper absorption with increased iron intake as there was no difference in zinc or copper intakes at 9 or 12 months. Infections other than respiratory, tended ($p = 0.01$) to be greater in the *high iron* group at both 9 months (0.06 ± 0.05 vs 0.03 ± 0.05) and 12 months (0.07 ± 0.06 vs 0.03 ± 0.06). There appears to be no advantage to iron intakes above current recommendation for LBW infants. Supported by the Medical Research Council of Canada and Ross Laboratories.