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19 A-Lactalbumin and Casein-Glycomacropeptide Have No Effect on Iron Absorption From Low-Iron Formula in Healthy Term Infants

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Abstract

Background and aims: Iron absorption from infant formula is low. α-Lactalbumin and casein-glycomacropeptide are thought to enhance mineral absorption. We evaluated the effects of α-lactalbumin and casein-glycomacropeptide on iron absorption from low-iron infant formula in healthy term non-iron-deficient infants.

Methods: In a double-blind randomized controlled trial, 32 infants were assigned to receive one of three low-iron (4mg iron/L) formulas from 6 weeks to 12 6 months of age. The formulas contained the same protein amount (13.1g/L) but different concentrations of α-lactalbumin and casein-glycomacropeptide: (1) standard formula (11% α-lactalbumin/14% casein-glycomacropeptide; n=10), (2) α-lactalbumin-enriched formula (25% α-lactalbumin/15% casein-glycomacropeptide; n=11), and (3) α-lactalbumin-enriched/casein-glycomacropeptide-reduced formula (25% α-lactalbumin/10% casein-glycomacropeptide; n=11). Ten exclusively breastfed infants were recruited as a reference. At 5.5 months of age, infants were given $^{58}$Fe with one of their feeds. Blood samples were collected 14 days later for fractional iron absorption and serum ferritin determination.

Results: Mean (±SD) iron absorption was 10.3±7.0% from standard formula, 8.6±3.8% from α-lactalbumin-enriched formula, and 9.2±6.5% from α-lactalbumin-enriched/casein-glycomacropeptide-reduced formula, with no difference among the three formula groups (P=0.92). Iron absorption from all three formulas was 9.4±5.8% compared to 12.9±6.5% from breastmilk (P=0.73). In the formulafed infants, but not the breastfed infants (P=0.51), iron absorption was negatively correlated with serum ferritin (P=0.01), and was higher (P=0.01) in infants with serum ferritin < 12μg/L (16.4±12.4%) compared to those with serum ferritin ≥12μg/L (8.6±4.4%).
Conclusions: α-Lactalbumin and casein-glycomacropeptide do not affect iron absorption from low-iron formula in healthy term infants. Low serum ferritin concentrations enhance iron absorption from infant formula.