

Thesis Title Nutritive value of soybean and cow's milk
 based infant formulas : effects on mineral
 status.

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Date of Graduation

 8 June B.E. 2536 (1993)

ABSTRACT

Currently there is a steady increase in the number of working women and career women as a result of higher education and socio-economic necessity. This increase is paralleled by a rise in artificial feeding and price of infant formulas. The cost of artificial feeding could dent in a substantial portion of the family income. One way to reduce the price of infant formulas is to lower the cost of raw materials without sacrificing quality. Partial substitution of cow's milk protein with soy protein isolate might achieve such goal but it remains to be seen whether such substitution would not compromise quality especially with regard to mineral status. The purpose of this study is, therefore, to evaluate the status of iron, zinc,

copper, calcium, magnesium and phosphorus in infants fed formula with its cow's milk protein partially replaced by soy protein isolate.

The study involved forty-two full term infants equally divided into two groups, the control group receiving a standard cow's milk based infant formula and an experimental group receiving an infant formula containing 60% soy protein isolate and 40% cow's milk protein. Each group comprised 11 boys and 10 girls. The two formulas were completely supplemented with vitamins and minerals and had equal amount of methionine. They were exclusively given to randomly assigned infants for three months from approximate age 1 month through age 4 months. Determinations of red blood cell parameters and free erythrocyte protoporphyrin, concentrations of serum calcium, phosphorus, magnesium, alkaline phosphatase and ceruloplasmin and of plasma zinc and copper at 0 time and at 6-7 week intervals.

The results are as follow :

1. Growth

Growth and anthropometric measurements were normal in all infants and were similar among all infants.

2. Iron status

Although values of Hct, Hb, RBC count and free erythrocyte protoporphyrin were not different between the two groups of infants, but free erythrocyte protoporphyrin tended to increase especially at 3 months in infants fed the soy protein isolate containing formula albeit equal iron contents; this may indicate that iron in the soy

formula was less bioavailable than that in the cow's milk formula.

3. Zinc status

Plasma zinc concentrations were significantly lower in the soy milk fed infants than in the cow's milk fed infants.

Zinc status in the former was not as good as that in the latter because of probable interference of zinc absorption by phytate in the soy protein isolate.

4. Copper status

Copper status was similar between the control and the experimental groups.

5. Calcium, phosphorus and magnesium status

Concentrations of serum calcium, phosphorus and magnesium did not differ between the two groups of infants as well.