

Why Dietary Supplements?

Nutrition and infection are intimately related,¹ and this relationship is important for young children who frequently suffer diarrheal disease and respiratory infections. Although not well defined,² the quality of diets in young children is likely to have lasting effects on growth and development.^{3,4} To discover if a nutritional supplement would decrease the number of infections and positively affect the immune system in healthy children, Li et al⁵ fed children a follow-up formula to which docosahexaenoic acid, yeast β -glucan, and a prebiotic blend of polydextrose and galactooligosaccharides were added. They compared data from these children with a group who were fed cow's milk in place of the supplemented formula. They found no difference in diarrhea between the 2 groups. There was a modest difference in respiratory illnesses, antibiotic use, and white blood cell count and interleukin-10 levels at certain periods during the observation time. The authors suggested that the supplement promotes health for preschool-aged children.

Information important to the interpretation of this report⁵ is lacking. The reader needs to know actual weights of the children, how much of the milk or supplement was consumed, and the daily total caloric intake. Each group was offered milk or the supplement in quantities that if they had been completely consumed, would have amounted to 30% to \geq 50% of the recommended daily caloric intake. The American Academy of Pediatrics recommends 16 oz (2 servings) of milk a day.⁶ Study subjects were prescribed 3 servings a day. Although the authors report that the mean z score weight-for-height (ZWH) was significantly different for female subjects at baseline, we cannot know if some subjects were malnourished. The increase in ZWH over the study period suggests that the caloric intake was higher than required or some children were malnourished and achieved catch-up weight. If the children were not malnourished, then they received excessive calories.

A further concern is the prevalence of anemia, which has been found to be 20% in preschool-aged Chinese children.⁷ In the study by Li et al,⁵ it was 65% at study entry and 58% at study conclusion. This finding, along with the low ZWH inclusion criteria, suggests at least some of the children were malnourished at entry into the study, in which case supplements could be beneficial.

The report by Li et al⁵ raises philosophical and practical issues. Philosophically, should the focus for healthy children be on supplements or on foods to achieve fewer infections? Supplements allow for control of exactly what is consumed and could have a defined predictable effect on immunity. In becoming more and more prescribed, does the diet focus on controlling one or a few specific outcomes, such as immunity, at the expense of other desirable outcomes? Would specific substances prevent the intake of a balanced, well-rounded diet or the absorption of other nutrients that also have long-term effects?

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KEY WORDS

dietary supplements, docosahexaenoic acid, galactooligosaccharides, infection, nutrition, polydextrose, prebiotic, yeast β -glucan, young children

ABBREVIATION

ZWH—z score weight-for-height

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Eating behaviors are developed in the first 5 years of life.^{8,9} Children may be predisposed to prefer some tastes to others, but they are also predisposed to learn preferences for foods made available to them.^{10–12} If reliance is placed on supplements to provide a healthy diet, what becomes of the child's ability to learn new flavors, to experience healthful foods, and to incorporate these new foods into his or her diet? What effect would a limited diet have on the microbiome, an engine that may

chauffeur health and disease?^{13,14} Also, as a matter of practicality, who will get this fortified formula? It is doubtful that it will be as inexpensive as milk.

In the end, the article by Li et al⁵ does not further understanding of how nutrients might reduce infections. The supplement simply had too many additions to allow one to discern which one or combination thereof had a desirable effect. Similarly, we cannot know if using a supplement to achieve fewer infections

at one stage in the life cycle has long-lasting positive or negative consequences. Furthermore, the supplementation may be simply correcting the consequences of malnutrition.

Perhaps we need to understand the quality of diets that young children consume and what the long-term outcome manipulations of those diets might cause before we make the leap to bypass foods and focus on supplements designed to attain immediate goals.

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