



## ONLINE EXCLUSIVE

# Q | Multivitamins for healthy children: What are the true benefits?

### EVIDENCE-BASED ANSWER

**A | THE BENEFITS APPEAR TO BE LIMITED.** It's doubtful that multivitamin with mineral (MVM) supplementation improves IQ in healthy, low-risk children (strength of recommendation [SOR]: **B**, conflicting randomized clinical trials [RCTs]).

However, MVM supplementation decreased the incidence and severity of com-

mon infectious diseases among children in peri-urban India (SOR: **B**, RCT).

Multivitamin (MV) use doesn't have consistently reported harms (SOR: **C**, conflicting cohort studies). An association between MV use and higher rates of asthma and food allergy has been reported, but studies conflict and any such effect is small.

### Evidence summary

An RCT found that MVM supplementation for one academic year didn't improve academic achievement more than placebo in 640 children, 8 to 12 years of age, from low-income urban families.<sup>1</sup> Scores on the Terra Nova academic achievement test of reading, math, language, science, and social sciences didn't differ between students taking MVM supplements or placebo.

Another RCT that compared MVM supplementation with placebo among 245 children between 6 and 12 years of age found no clinically significant improvements in IQ scores overall. However, within a small subset, more children who took MVM showed a clinical increase in IQ than children who took placebo.<sup>2</sup>

Investigators randomized children to daily MVM supplementation (50% of the US recommended daily allowance) or placebo for 3 months, then measured their Wechsler IQ scores. Overall, the MVM group scored 2.5 points higher (95% confidence interval [CI], 1.85-3.15) than the placebo group (a 15-point change is clinically significant).

More children taking MVM supplements (44) than placebo (25) showed increases in nonverbal IQ scores of 15 or more points (35% compared with 21%;  $P<.01$ ). The authors speculate that this result may be attributable to the fact that one in 7 schoolchildren was undernourished. A major weakness of the study was its 16% attrition rate.

### Fortified milk reduced disease in young children in India

A community-based, double-blind RCT found that milk fortified with vitamins A, C, and E plus minerals reduced common illnesses over the course of a year more than unfortified milk among 633 children 1 to 3 years of age living in a peri-urban area of India.<sup>3</sup>

Children who drank fortified milk had fewer days of fever (9.1 compared with 9.7 days for placebo;  $P=.005$ ), a lower incidence of diarrhea (odds ratio [OR]=0.82; 95% CI, 0.73-0.93), and a decreased rate of lower respiratory illness (OR=0.74; 95% CI, 0.57-0.97). Children 2 years and younger showed the greatest effect.

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**Fortified milk reduced common illnesses over the course of a year more than unfortified milk.**

## Asthma and food allergies:

### The data are mixed

An inception cohort study found an association between early MV use and a higher risk of asthma and food allergies.<sup>4</sup> Investigators evaluated more than 8000 American women and their newborns over the first 3 years of life. The study population included more families with low socioeconomic status (50%), blacks (51%), and infants born before 37 weeks' gestation (23%) than the general US population.

Exclusively formula-fed infants who took MV in the first 6 months were more likely to develop asthma (OR=1.27; 95% CI, 1.04-1.56) and food allergies (OR=1.6; 95% CI, 1.2-2.2) than formula-fed infants who didn't take MV.

However, a birth cohort study of 2470 Swedish children that analyzed health data from parental questionnaires and compared

serum immunoglobulin E (IgE) concentrations at 8 years of age found no association between MV use within the past 12 months and clinical allergic disease or specific IgE concentrations.<sup>5</sup> Children who took MV at age 4 years or earlier had lower rates of IgE sensitization to food allergens at 8 years (OR=0.61; 95% CI, 0.39-0.97).

## Recommendations

According to the American Academy of Pediatrics Committee on Nutrition,<sup>6</sup> healthy children who are growing normally and consume a varied diet don't need routine supplementation with vitamins and minerals. The Committee states that if parents wish to give their children supplements, a standard pediatric multivitamin generally poses no risk.

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## References

- Perlman AI, Worobey J, O'Sullivan Maillet J, et al. Multivitamin/mineral supplementation does not affect standardized assessment of academic performance in elementary school children. *J Am Diet Assoc.* 2010;110:1089-1093.
- Schoenthaler SJ, Bier ID, Young K, et al. The effect of vitamin-mineral supplementation on the intelligence of American schoolchildren: a randomized, double-blind, placebo-controlled trial. *J Altern Complement Med.* 2000;6:19-29.
- Sazawal S, Dhangra U, Dhangra P, et al. Effects of fortified milk on morbidity in young children in north India: community based, randomised, double masked, placebo controlled trial. *BMJ.* 2007;334:140.
- Milner JD, Stein DM, McCarter R, et al. Early infant multivitamin supplementation is associated with increased risk for food allergy and asthma. *Pediatrics.* 2004;114:27-32.
- Marmsjö K, Rosenlund H, Kull I, et al. Use of multivitamin supplements in relation to allergic disease in 8-year-old children. *Am J Clin Nutr.* 2009;90:1693-1698.
- Committee on Nutrition, American Academy of Pediatrics. Feeding the child. In: Kleinman RE, ed. *Pediatric Nutrition Handbook.* 5<sup>th</sup> ed. Elk Grove Village, Ill: American Academy of Pediatrics; 2009:145-174.