VITAMIN A SUPPLEMENTATION IMPROVES INTESTINAL BARRIER FUNCTION AND REDUCES TOTAL PARASITIC AND SPECIFIC GIARDIA SPP. INFECTIONS IN BRAZILIAN CHILDREN


Federal University of Ceará, Fortaleza, CE, Brazil; Columbia University, New York, NY; University of Virginia Center for Global Health, Charlottesville, VA

Objective: This study evaluates the effects of retinol on intestinal barrier function, inflammation, parasites, and growth in children living in an urban community in the Northeast of Brazil.

Methods: The study was a double-blind, randomized placebo-controlled trial (http://clinicaltrials.gov; Register #NCT00133406) involving 79 Brazilian children, 39 given vitamin A 100-200 thousand IU each four months and 40 receiving placebo (C), and followed prospectively for over thirty six months.

Results: The groups were similar with regard to age, sex, nutritional parameters (z-scores), serum retinol concentrations, proportion of lactoferrin positive stool samples, and intestinal barrier function. The percentage of urinary lactulose and mannitol excretion consistently decreased among the vitamin A group and reached significance after four months of follow-up (p<0.05). The lactulose:mannitol ratio did not change during the same time of follow-up (p>0.05). The proportion of lactoferrin positive samples evaluated at one month did not change between groups (p>0.05). There was no significant difference in the total and specific proportions of parasitic infections at enrollment between vitamin A versus placebo group (p > 0.05). However, vitamin A group had significantly fewer total parasitic infections (p = 0.048) and specific Giardia lamblia infection (p = 0.028) at one month of the study protocol. The cumulative z-scores for weight-for-height (WHZ), height-for-age z-scores (HAZ), and weight-for-age (WAZ) did not change significantly with vitamin A intervention over 36 months of follow-up.

Conclusions: Vitamin A improves intestinal epithelial paracellular permeability, but decreases absorptive area. The prevalence of parasitic infection, especially Giardia spp., was significantly lower in vitamin A treatment group.