

ORIGINAL RESEARCH COMMUNICATION

A double-blind, placebo-controlled, glutamine-supplementation trial in growth-faltering Gambian infants^{1, 2, 3}

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Background: Growth faltering during infancy is a characteristic of life in developing countries. Previous studies have shown that small-intestine mucosal enteropathy, accompanied by endotoxemia and a persistent systemic inflammatory response, accounts for up to 64% of the growth faltering in Gambian infants.

Objective: The objective was to test whether glutamine, with its putative trophic effects on enterocytes, immune cells, and intestinal integrity, can accelerate the repair of the intestine, lower immunostimulation, and reduce growth faltering.

Design: Ninety-three infants aged 4–10 mo from the West Kiang region of The Gambia were studied in a double-blind, double-placebo, controlled trial. Glutamine (0.25 mg/kg body wt) or a placebo that contained an isonitrogenous, isoenergetic mix of nonessential amino acids was orally administered twice daily throughout the 5-mo rainy season. Anthropometric measurements were made monthly during the supplementation period and for 6 mo after supplementation. Intestinal permeability was measured monthly (by determining the ratio of lactulose to mannitol), and finger-prick blood samples were collected for the analysis of plasma proteins on 3 occasions.

Results: Gambian infants showed a seasonal deterioration in growth and persistently elevated acute phase protein concentrations and intestinal permeability. Oral supplementation with glutamine did not improve growth ($\bar{x} \pm SE$: weight gain, 60 ± 19 and 69 ± 20 g/mo; length gain, 1.01 ± 0.05 and 0.95 ± 0.03 cm/mo) or intestinal permeability [lactulose:mannitol ratio: 0.29 (95% CI: 0.23, 0.35) and 0.26 (95% CI: 0.21, 0.32)] in the glutamine and placebo groups, respectively. It also had no effect on infant morbidity or on plasma concentrations of immunoglobulins or acute phase proteins.

Conclusion: Glutamine supplementation failed to improve growth or intestinal status in malnourished Gambian infants.

Key Words: Glutamine • growth • intestinal permeability • infants • malnutrition • immune response • randomized control trial • The Gambia

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