

**NITRIC OXIDE, MALARIA, AND ANEMIA: INVERSE RELATIONSHIP
BETWEEN NITRIC OXIDE PRODUCTION AND HEMOGLOBIN CONCENTRATION
IN ASYMPTOMATIC, MALARIA-EXPOSED CHILDREN**

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Abstract

The cause of the anemia associated with chronic, intermittent, asymptomatic, low-level parasitemia in children in malaria-endemic areas is not well understood. Nitric oxide (NO) decreases erythropoiesis, and it is likely an important mediator of anemia of chronic disease. Production of NO is decreased in acute uncomplicated and cerebral malaria, but it is increased in asymptomatic Tanzanian children (with or without parasitemia). We hypothesized that chronic overproduction of NO in these asymptomatic children contributes to the anemia associated with subclinical/subpatent malaria. In 44 fasting, asymptomatic, malaria-exposed, Tanzanian children, NO production (measured using fasting urine NO_x excretion) was inversely associated with hemoglobin concentration ($P = 0.03$, controlling for age and gender). Using multiple linear regression, hemoglobin concentration was negatively associated with parasitemia ($P = 0.005$). After controlling for age and parasitemia, NO was no longer an independent predictor of anemia. One of the mechanisms of parasite-related anemia in such children may be through the adverse hematologic effects of parasite-induced NO production.