Abstract

Tracking the effects of vitamin A on *Citrobacter rodentium* infection using bioluminescent imaging

Vitamin A deficiency largely affects children in third world countries and increases susceptibility to respiratory and enteric pathogens, resulting in increased childhood mortality. The effects of vitamin A deficiency on host resistance to enteric pathogens has not been determined. Preliminary data shows that vitamin A deficiency causes delayed clearance of an infection with the enteropathgenic bacteria, *Citrobacter rodentium*. In addition, treating vitamin A deficient mice with retinoic acid (the active form of vitamin A) induced clearance of the infection. Bioluminescent imaging will be used to visualize the transit of *C. rodentium in vivo* through the gastrointestinal tract. The mucosal immune responses will be studied using flow cytometry and RT-PCR. We hypothesize that retinoic acid induces protective mucosal immune responses to clear *C. rodentium*. Understanding the mechanisms by which vitamin A is protective has implications in the treatment and prevention of infection in vitamin A deficient children.