

The effect of transmission-blocking antibody ingested in primary and secondary bloodfeeds, upon the development of *Plasmodium berghei* in the mosquito vector

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Abstract

The effects of purified monoclonal immunoglobulins from control, or transmission-blocking anti-Pbs21 antibodies, upon the infection of *Anopheles stephensi* by ookinetes of *Plasmodium berghei* are compared. Anti-Pbs21 antibody reduced mean intensity and prevalence of infection by 94·7 and 58·7% respectively if added to the infectious bloodfeed at a concentration of 100 µg/ml. Fab fragments were of similar efficacy. No transmission enhancement was detected with declining antibody concentrations. Addition to subsequent (second) feeds reduced mean oocyst intensity but not prevalence. The reduction in blockade declined from 41% at day 2, to 4% at day 8. Second bloodfeeds, containing control globulin taken 4 or 6 days (but not 2 days) after infection, increased sporozoite burden in the salivary glands. At all times anti-Pbs21 reduced sporozoite number in the thorax compared to time-matched controls, but again highest gland intensities were obtained when the second bloodfeed was given on day 4. We conclude that second bloodfeeds containing transmission-blocking antibody simultaneously serve two opposing roles, (1) inhibition of parasite development and (2) the supply of nutrients which permit more sporozoites to be produced by each oocyst.

Key words: malaria, ookinete, *Anopheles*

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