

ELISA. The HRP2 ELISA, which permits the testing of large numbers of samples within relatively short time, may therefore provide a convenient alternative to PCR for complementing expert microscopy as a gold standard for *P. falciparum* diagnosis in research settings. These tests are therefore particularly suited for epidemiological field research, as confirmation of microscopic diagnosis, and for blood bank screening. Potential limitations in holoendemic areas and combined ELISAs for other malaria species should be explored.

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### **ESTIMATES OF *PLASMODIUM VIVAX* GAMETOCYTE FERTILITY AND OOKINETE TRANSFORMATION IN *ANOPHELES DIRUS* MOSQUITOES**

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Current efforts to develop transmission-blocking vaccines (TBV) for *Plasmodium vivax* aim to disrupt early sporogonic stages of the malaria parasites in the lumen of the anopheline midgut. However, the correlation between *P. vivax* gametocyte densities and their infectiousness to mosquitoes based on oocyst densities is unclear. We calculated transitional efficiencies between early parasite lifestages (macrogametocyte, ookinete, oocyst) and estimated the successive losses in parasite abundance. We examined early sporogonic development of natural strains of *Plasmodium vivax* in laboratory-reared *An. dirus* mosquitoes fed on gametocytemic blood drawn from uncomplicated, symptomatic patients reporting to a malaria clinic in Mae Sot, Thailand. Relative densities of macrogametocytes per mosquito were estimated based on blood meal volume, RBC density and patient macrogametocytemia. Absolute densities of ookinetes were determined using immunofluorescent staining with a monoclonal antibody against Pvs25, a protein expressed on the surface of post-fertilization stages. Additional mosquitoes were dissected for oocysts on day 7. Transitional efficiencies between parasite lifestages were calculated and the successive losses in parasite abundance estimated. Parasite populations incurred a 300-fold loss in abundance during the transition from macrogametocyte to ookinete, and a >100-fold loss from ookinete to oocyst. Quantitative studies of *P. vivax* macrogametocyte fertility and ookinete transformation are crucial to understand the efficacy of TBV in *Anopheles dirus* and other susceptible mosquito vectors.

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