

Field evaluation of an enzyme-linked immunosorbent assay (ELISA) for *Plasmodium falciparum* sporozoite detection in anopheline mosquitoes from Kenya

Abstract:

An enzyme-linked immunosorbent assay (ELISA) using a monoclonal antibody that recognizes a repetitive epitope on the circumsporozoite protein of *Plasmodium falciparum* was used in Kenya to assess malaria infections in *Anopheles gambiae* s.l. and *An. funestus*. The ELISA confirmed that 88% of 44 sporozoite-positive gland dissections were *P. falciparum*. The ELISA infection rate of 18.6% (n = 736) for individually tested mosquitoes for both species was significantly higher than the 10.4% (n = 537) salivary gland sporozoite rate determined by dissection. This difference was due to ELISA detection of medium and large sized oocysts on the midguts of infected mosquitoes which did not contain salivary gland sporozoites. From a series of 379 *Anopheles* that were cut at the thorax, ELISA tests on "head" and "body" portions showed that 29.5% of 95 positive mosquitoes contained circumsporozoite antigen in the body portion in the absence of salivary gland infections. This field evaluation demonstrates that the ELISA can most accurately be used to estimate sporozoite rates by cutting mosquitoes at the thorax and testing anterior portions.