

EFFICACY OF THE MEROZOITE SURFACE PROTEIN 1 OF *PLASMODIUM VIVAX* AS AN ANTIGEN FOR ELISA TO DIAGNOSE MALARIA

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Malaria is still a major health problem in Thailand and its incidence is currently rising in Korea. To identify a useful antigen for the diagnosis of malaria patients, a cDNA expression library from malaria parasites was constructed and screened out immunologically. One clone was selected in view of its predominant reactivity with the patient sera. The recombinant malaria parasite antigen (Pv30) with 27 kDa as a C-terminal His-tag fusion protein that was produced in *Escherichia coli* was identified through immunoblot analysis. The deduced amino acid sequence had the sequence homology with the merozoite surface protein 1 (MSP1) genes of *Plasmodium falciparum* and *P. yoelii*, each by 41% and 42%, respectively. Measurement of serum IgG and IgM antibody to Pv30 by enzyme-linked immunosorbent assay (ELISA) was evaluated as a serodiagnostic test for malaria patients in Thailand (endemic area) and Korea (recently reemerging area). The sensitivity of *P. vivax*, *P. falciparum*, and *P. malariae* was 96.3% (26/27), 90.6% (29/32), and 100% (6/6), respectively, and the specificity was 63.5% (40/63) in Thailand samples. The sensitivity of *P. vivax* was 98.8% (88/89), and the specificity was 96.6% (86/89) in Korean samples. Pv30 appears to be a good and reliable recombinant antigen for serodiagnosis of malaria in a nonendemic area

Yonsei Med J. 2004; 45(1): 129-34.

ELISA: AUGMENTING THE GOLD STANDARD IN MALARIA DIAGNOSIS

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In spite of new technologies that have become widely available in recent years, malaria still presents a diagnostic challenge to laboratories in most countries. The urgency and importance of obtaining rapid results from patients with suspected acute malaria render some of the more sensitive methods for malaria diagnosis impractical for routine laboratory use. These relatively new techniques, however, are essential for malaria research. We tested the sensitivity and specificity of a histidine-rich protein 2-based, commercially available ELISA antigen detection assay for *Plasmodium falciparum*. A total of 700 whole blood samples obtained from symptomatic outpatients of malaria clinics along the Thai-Burmese border were tested relative to duplicate expert microscopy adjusted with species-specific PCR. PCR-adjusted microscopy showed that 82 (11.7%) were infected with *P. falciparum*, 128 (18.3%) with *P. vivax*, 1 (0.1%) with *P. malariae*, and 491 (70.1%) were negative. The geometric mean parasite density for *P. falciparum* was 7320 (range: 12 - 363,810/ μ L). The overall sensitivity of the HRP2 ELISA for *P. falciparum* malaria was 98.8% and the specificity was 100%. With a sensitivity of 92.7% and a specificity of 98.8%, the performance characteristics of duplicate expert microscopy alone for the detection of *P. falciparum*, particularly in mixed infections, were considerably inferior compared to the