ia in Malaysia by nested polymerase chain reaction amplification of dried blood spots on filter papers.

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Abstract:

A modified nested polymerase chain reaction (PCR) method for detection of Plasmodium falciparum, P. vivax and P. malariae was combined with a simple blood collection and deoxyribonucleic acid (DNA) extraction method and evaluated in Malaysia. Finger-prick blood samples from 46 hospital patients and 120 individuals living in malaria endemic areas were spotted on filter papers and dried. The simple Chelex method was used to prepare DNA templates for the nested PCR assay. Higher malaria prevalence rates for both clinical (78.2%) and field samples (30.8%) were obtained with the nested PCR method than by microscopy (76.1% and 27.5%, respectively). Nested PCR was more sensitive than microscopy in detecting mixed P. falciparum and P. vivax infections, detected 5 more malaria samples than microscopy on the first round of microscopical examination, and detected malaria in 3 microscopically negative samples. Nested PCR failed to detect parasite DNA in 2 microscopically positive samples, an overall sensitivity of 97.4% compared to microscopy. The nested PCR method, when coupled with simple dried blood spot sampling, is a useful tool for collecting accurate malaria epidemiological data, particularly in remote regions of the world.