A NOVEL *PLASMODIUM FALCIPARUM* DRUG SUSCEPTIBILITY ASSAY BASED ON HISTIDINE-RICH PROTEIN II

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The value of malaria *In vitro* drug susceptibility data for the development of new drugs as well as for the surveillance of antimalarial drug resistance is undisputed. The traditional *In vitro* assay, however, Remains a tedious process, which, depending on the method employed, requires a high degree of expertise sophisticated laboratory infrastructure, skills and patience. We have developed a new drug sensitivity assay for *Plasmodium falciparum* based on the quantitative assessment of histidine rich protein II (HRP2), a histidine and alanine rich protein produced by *P. falciparum,* using a Commercial ELISA test kit. Parasite strains or clones are incubated on microculture plates pre-dosed with ascending concentrations of antimalarial drugs. After a 48 to 72 hour culture, the samples are freeze-thawed and transferred onto ELISA plates pre-coated with monoclonal Ab against PfHRPII. The complete ELISA takes about 2.5 hours to perform and requires little technical equipment. In our experiment testing 20 laboratory strains of *P. falciparum* against chloroquine, mefloquine, quinine and artemisinin, the results closely parallel those obtained from the isotopic assay ($R = 0.892$; $P < 0.0001$) and from WHO schizont maturation tests ($R = 0.959$; $P < 0.0001$). The new assay was found to be very sensitive, highly reproducible, fast and simple to establish and perform. Initial results from our effort to validate the technique using *P. falciparum* field isolates suggest similar outcomes. This novel assay may be valuable for a wide range of applications from Epidemiological studies to the screening of new drugs, and may therefore have the potential to replace traditional *In vitro* drug sensitivity techniques.

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