A PILOT FIELD SURVEY ON THE *IN VITRO* DRUG SUSCEPTIBILITY OF *PLASMODIUM FALCIPEPARUM* IN LAO PDR

TOSHIMITSU HATABU, VIENGXAY VANISAVETH, NAO TAGUCHI, JUN KOBAYASHI, M. KAISSAR MANNOR, HISAMI WATANABE, HIROMU TOMA, SAMLANE PHOMPIDA, and SHIGEYUKI KANO

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In Southeast Asia, malaria has presented a major public health problem, and the spread of drug-resistant falciparum malaria is making the problem more serious in this region. Thus, evidence-based detection of drug-resistant parasites is important for the accurate evaluation of susceptibility to antimalarial drugs. Lao PDR (Lao People’s Democratic Republic) is a developing country in which about 70% of the population lives in malaria endemic areas. Because of the lack of information on the *in vitro* drug susceptibility of parasites in this country, chloroquine (CQ) is still the drug of choice for uncomplicated falciparum malaria [1]. This report is a pilot field survey on the *in vitro* CQ- and mefloquine (MQ)-susceptibility of falciparum malaria using AnaeroPack® gas system in Saravan province, Lao PDR.

Saravan province is located in the southern part of Lao PDR. The survey in this province was conducted from August 8 to 16, 2003. Blood samples were successfully obtained from nine Laotian patients suffering from falciparum malaria. The samples were collected by the staff of the Center of Malariology, Parasitology and Entomology, after explaining the purpose of the study to the patients. The survey was conducted in accordance with the ethical guidelines for epidemiological studies established by the Ministry of Education, Culture, Sports, Science and Technology and Ministry of Health, Labour and Welfare of Japan. The *in vitro* drug susceptibility test was administered using the AnaeroPack® gas system in Saravan province, Lao PDR.

The results of this study are shown in Table 1. When complete schizont inhibition is observed at a CQ amount of...
80 nM or less, the parasite is considered susceptible. If schizont formulation is observed at an MQ amount of 640 nM or more, the parasite can be considered resistant. In the present study, four (44%) of the nine isolates were resistant to CQ, while all the isolates were susceptible to MQ. There was no correlation between the parasitemia and CQ-resistance.

The results of this study suggest that CQ-resistant parasites have increased even though CQ is commonly used as the first-line drug for treatment of uncomplicated falciparum malaria in Lao PDR. In neighboring countries such as Thailand and Cambodia, high-grade multi-drug resistant parasites are reported to be spreading and, indeed, in vivo CQ-resistant falciparum malaria has already been reported in Lao PDR [6]. Dedicated efforts have to be made to determine the in vitro drug susceptibility of P. falciparum in Lao PDR as a way to prevent the spread of multi-drug resistant parasites in the near future. This is the first test report on in vitro drug resistance in Lao PDR.

REFERENCES


