

Gametocytocidal and Sporontocidal Studies of Experimental Antimalaria Therapeutic Regimens

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OBJECTIVE : To determine the gametocytocidal and sporontocidal and sporontocidal effects of experimental antimalarial therapeutic regimens on the malaria parasites in *Anopheles dirus* and *An. maculatus* fed on test malaria patients.

BACKGROUND : One very important aspect of evaluating antimalarial therapeutic regimens is to determine their effect on the sexual cycle of the malaria parasite. This evaluation primarily involves screening the blood of malaria patients for gametocytes over a series of days post-treatment. However, gametocytes are often present at levels too low for detection using standard blood film screening techniques. Another method to determine the presence of healthy gametocytes is to allow known vector mosquitoes to feed on the patient and to monitor, by dissection, the development of parasites (if any) in the mosquitoes. The development of "normal" appearing oocysts, subsequently coupled with heavy infections of sporozoites in the salivary glands is good evidence against gametocytocidal or sporontocidal activity by the test antimalarial regimen.

Gametocytocidal studies have been carried out at this laboratory over the past several years in conjunction with the U.S. Army's Drug Development Program (1, 2, 3). Data from these studies indicate a definite increase or enhancement of gamogony and subsequent sporogony with the use of Fansidar treatments (2, 4).

METHODS : During this period studies were carried out at the Phraya Pahol-polpayuhasena Hospital, Kanchanaburi Hospital and the Phra Phutthabat Hospital in Sara Buri Province. The usual conditions for admission of patients to AFRIMS therapeutic trials were observed. Patients with *P. falciparum* or *vivax* were assigned to therapy groups using one of the following 5 treatment regimens: Mefloquine hydrochloride (1500 mg-single dose), Fansidar (2 tablets), Fansidar (3 tablets), Quinine (650 mg.g. 8 hours for 7 days) and Quinine (650 mg. q. 8 hours for 7 days) plus Primaquine (15 mg/day x 5 days).

Fifty *Anopheles dirus* (Bangkok Strain) and 50 *An. maculatus* (IMR Strain) were fed on patients on the day of admission (Day 0) before treatment and on days 1. Follow up feeds using these 2 species occurred on days 7, 14 and 21, if the patient still exhibited parasites on blood smears on those days. Mosquitoes were dissected on days 7 and 14 after feeding. Guts and glands were examined for oocysts and sporozoites, and oocyst indices and sporozoite densities were determined.

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