

4. Title:

Survey for Chloroquine-Insensitive Malaria in Thailand

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Objective: To measure the prevalence of Chloroquine resistant malaria in selected areas of Thailand.

Description: The populations of the study areas are first screened for patent parasitemia. Thick and thin blood films are stained with Giemsa stain and examined. Those persons with parasitemia receive an oral dose of chloroquine diphosphate equivalent to 10 mgm. per pound of body weight based on predetermined weight groups (see previous report*) over a period of three days. Two days later re-examinations are made and parasites present in the peripheral blood are assumed to represent chloroquine-insensitive forms.

Progress:

a. Re-survey in Satul, Yala and Narathiwat provinces. The three self-help settlements in South Thailand mentioned in the previous report were revisited. All areas has been found in 1964 to have high prevalence of P. falciparum infections (40-60%), with approximately 80% of these infections demonstrating resistance to 10 mgm/lb. of chloroquine. Occasional (1-2%) P. vivax infections were found.

Table 1 presents the results of the September 1965 survey. No screening for chloroquine resistance was carried out, due to the unavailability of medical supervision.

The data indicated a marked decrease in P. falciparum prevalence and a slight increase in P. vivax. During the months since the previous survey, DDT had been applied twice to all buildings in the Waeng area, and anti malarials (chloroquine and possibly pyrimethamine or primaquine) were reportedly distributed in the study region, although details of population treated, dosages employed, or duration of treatment were not known. Other factors which might have played a role in the observed differences were seasonal variation of prevalence of which little is known in this region, and change in staining agent from Romanovvsky stain, used in previously reported work, to Giemsa. Transmission in these areas probably coincides with the rainy season (October-December), so it was elected to re-survey in January 1966 when it was anticipated that falciparum infections would be increased. Table 2 summarizes the January 1966 experience. Persistent monsoon rains forced premature termination of this survey, so that resistance studies could not be carried out.

b. Survey in Petchaboon and Saraburi. In October and November 1965, similar surveys were carried out among residents of Soi 7, Phukae, Muang Saraburi, and in two schools in Wichienburi, Petchaboon. Persons found to be circulating plasmodia were given chloroquine diphosphate as outlined above. Results are presented in tables 3 and 4

Notes

*Bourke, A.T.C. et al., 1965, SMRL Study No. 108, SMRL Annual progress Report.

SUMMARY

Study areas in Yala, Satul and Narathiwas provinces were resurveyed in September 1965 and January 1966. The formerly high prevalence rates of P. falciparum (40-60%) had fallen by the last survey to 5% or less, while prevalence of P. vivax remained essentially unchanged. No chloroquine resistance studies were completed.

Surveys were done in Saraburi and Petchaboon provinces in October 1965. P. falciparum prevalence rates were 10-30%, with less than 10% of P. falciparum infections demonstrating chloroquine resistance.

Futher study in these areas is contemplated.

Table 1

Prevalence of Malaria Parasites, South Thailand
Survey Areas, September 1965

Settlement	Group Examined	Number Examined	Infections <u>P. falciparum</u>	Rate	<u>P. vivax</u>	Rate
Waeng Narathiwas	School children	153	0	0	0	0
	House occupants	195	0	0	2	1%
	Total	348	0	0	2	0.5%
Tantoe, Yala	School Children	62	5	8%	2	3%
	House occupants	450	87	19%	8	2%
	Total	512	92	18%	10	2%
Kuan Kalong Satul		214	11	5%	10	4%

Table 2

Prevalence of Malaria Parasites, South Thailand
Survey Areas, January 1966

Settlement	Group Examined	Number Examined	Infections <u>P. falciparum</u>	Rate	<u>P. vivax</u>	Rate
Waeng Tantoe Kuan Kalong	House occupants	323	2	0.6%	0	0
	School children	125	6	5%	4	3%
	House occupants	261	10	4%	3	1%

Table 3

Prevalence of Malaria Parasites. Central Thailand
Survey Areas. October - November 1965

Site	Number Examined	Infections <u>P. falciparum</u>	Rate	<u>P. vivax</u>	Rate	Comments
Phukae Saraburi	249	67	28%	3	1%	incl. 1 mixed P. fal/P. vivax. 1 mixed P. fal/P. malaria.
Wichienburi School Petchaboon	363	31	9%	4	1%	incl. 1 mixed P. fal/P. vivax
Ban NaRai School Petchaboon	529	100	19%	1	—	

Table 4

Subjects circulating Asexual forms of
P. falciparum prior to and 5 days following a dose of 10 mgm.
Chloroquine base/lb body weight.
October-November 1965. Central Thailand.

Site	No. Previously infected available for follow up	No. Positive of follow	Rate
Phukae Saraburi	54	2	
Wichienburi School Petchaboon	7	7	
Ban NaRai School Petchaboon	75	2	
Total	136	11	9%

General Information-Malaria

Malaria prevalence surveys. In response to specific requests in support of efforts of other deterrents, or as incidental undertakings in the course of unrelated studies, malaria prevalence surveys were done in thirteen provinces of Thailand. Surveys were conducted in schools or as house to house hamlet surveys. In all cases, thick and thin blood films were examined after Giemsa staining. Due to differences in season of survey and in age distributions of sample population, no direct comparison between the figures obtained for the various areas is valid. In addition, pooling of the data has obscured the not inconsiderable variation in point prevalence which often occurs in a single district. However the data are of general interest and give an indication of the geographic distribution of malaria in Thailand. Table 1 presents the data from these surveys.

Table 1

Point prevalence surveys for malaria in Thailand
by date, province, district, prevalence and species
seen. May 1965 - March 1966.

Date	Province	District	Number Examined	Number Positive	Rate	Species seen
May 65	Loei	Loei	315	165	52.4	P. falciparum, occasional P. vivax rare P. Malarial
		Chiengcan	297	16	20.5	
		Thali	34	10	29.4	
		Wangsphong	112	17	15.2	
		Total	854	253	29.6	
June 65	Korat	Pakchong	703	42	6.0	P. falciparum, frequent P. vivax
		Pakthongchai	238	64	27.9	
		Total	941	106	11.3	
July 65	Phare	Rongkwang	121	3	2.5	P. falciparum
July 65	Nan	Sa Na Noi	238	22	9.2	P. falciparum occasional P. vivax and P. malarial
			174	22	12.6	
		Total	412	44	10.7	
Oct. 65	Saraburi	Saraburi	196	36	18.3	P. falciparum, few P. vivax rare P. malarial
		Kaengkhoi	241	36	14.5	
		Total	437	72	16.5	
Oct.- Nov. 65	Lopburi	Chaibadan	501	1	0.6	P. falciparum
		Pathanatnikom	101	4	3.9	
		Total	602	5	0.8	
Nov. 65	Petchaboon	Wichienburi	678	239	35.2	P. falciparum, occasional P. vivax
Dec. 65	Rnyong	Rayong	114	1	0.9	P. falciparum, few P. vivax
		Klaeng	303	31	6.9	
		Total	417	22	5.3	
Feb. 66	Prachinburi	Arranyaprathe	158	13	8.2	P. falciparum, and P. vivax
Feb. 66	Rayong	Klaeng	20	0	0	—
Feb. 66	Nakornphanom	Mukdaharn	293	22	7.5	P. falciparum, few P. vivax
Feb. 66	Ubol	Phibulumg-saharn	289	18	6.2	P. falciparum, and P. vivax
Feb. 66	Srisaket	Knathalak	59	8	13.5	P. falciparum and P. vivax
Feb. 66	Suratthani	Koh samui	461	10	2.1	P. falciparum rare P. vivax

GRAND TOTALS

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14.2