

Thesis Title	Comparative Study of Pyrethroid Impregnated Mosquito nets with DDT Residual Spraying for Malaria Control in Thailand
Name	Malinee Prasittisuk
Degree	Doctor of Philosophy (Biology)
Thesis Supervisory Committee	Visut Baimai, Ph.D. Pirom Kamol-Rattanakul, M.D., M.Sc. Supaporn Ratanatham, Ph.D. Ronald Rosenberg, Sc.D. H. Kyle Webster, Ph.D.
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ABSTRACT

A study to compare the effect of pyrethroid impregnated mosquito nets with DDT indoor residual spraying on malaria control has been carried out in an area of high malaria incidence with a 20 year history of DDT spraying at Karen villages in Mae Ramard District, Tak Province, west of Thailand. Ten hamlets of 189 houses with 1,010 population were given only mosquito nets impregnated with lambda-cyhalothrin at the dosage of 0.02 gm. a.i./m². Twelve hamlets of 294 houses and 1,315 population were sprayed with 2 gm. a.i./m² DDT indoors and another six hamlets with 171 houses and 695 population were withdrawn from DDT spraying and no distribution of mosquito nets. Application of lambda-cyhalothrin impregnated mosquito nets and DDT spraying were done once each year in June for three years from 1991-1993. Community participated in the impregnation process. It was found that the residual effect of 0.02 gm. a.i./m² lambda-cyhalothrin was longer than 1 year and suggest that impregnation with this chemical only once a year will be sufficient. All three major malaria vectors i.e. *A. dirus*, *A. minimus* and *A. maculatus* were highly susceptible to this chemical. A high acceptance by the people involved in impregnation and using the mosquito nets was observed. Both entomological and epidemiological impacts were evaluated. Neither lambda-cyhalothrin impregnated mosquito nets nor DDT residual spraying had a demonstrable impact on vector density or age composition. In experimental huts, mosquito net's impregnated with permethrin or deltamethrin or lambda-cyhalothrin or etofenprox had repellency and killing effects; in local houses, impregnation of incompletely closed and torn mosquito nets, with the same 4 pyrethroids, did not deter mosquitoes from landing on baits inside the nets, but had a significant killing effect; both in experimental huts and in local houses, permethrin produce greater mortality than the 3 other pyrethroids. With respect to epidemiological evaluation, both lambda-cyhalothrin impregnated mosquito nets and DDT residual spraying had an apparent impact on both prevalence and incidence of malaria, but circumstances imposed some restrictions on the study design (non-random allocation; non-replication; only one baseline prevalence survey), which do not allow to attribute with confidence the apparent impacts to the interventions.