

**INSECTICIDE
RESISTANT**

Insecticide Susceptibility, Sarawak 2003

Localities	Strain / Species	Insecticides	LT50 (min)	24 h Mortality (%)
Tebekang	<i>Cx tritaeniorhynchus</i>	DDT 4%	38.29	100
		Permethrin 0.75%	15.57	100
		Lambda 0.05%	22.62	100
		Cyfluthrin 0.15%	12.92	100
		Malathion 5%	29.28	100
		Fenitrothion 1%	62.23	100
		Propoxur).1%	56.03	100
Sebintin	<i>Cx tritaeniorhynchus</i>	DDT 4%	46.69	100
		Permethrin 0.75%	11.92	100
		Lambda 0.05%	17.85	96.9
		Cyfluthrin 0.15%	11.97	100
		Malathion 5%	19.72	100
		Fenitrothion 1%	47.12	100
		Propoxur).1%	37.67	100

Insecticide Susceptibility, Sarawak 2003

Localities	Strain / Species	Insecticides	LT50 (min)	24 h Mortality (%)
Tepin	<i>Cx tritaeniorhynchus</i>	DDT 4%	37.4	100
		Permethrin 0.75%	13.04	100
		Lambda 0.05%	3.05	100
	<i>Ma bonnea</i>	Permethrin 0.75%	19.91	100
		Lambda 0.05%	24.77	100
		Cyfluthrin	15.27	100
Koran	<i>Ae albopictus</i>	Permethrin 0.75%	26.53	100
Kg Tebekang	<i>Ae albopictus</i>	DDT 4%	32.61	86.7
		Permethrin 0.75%	24.03	100
		Lambda 0.05%	20.87	100
		Cyfluthrin 0.15%	12.64	100
		Malathion 5%	34.92	100
		Fenitrothion 1%	1098.8	100
		Propoxur).1%	33.78	100

Insecticide Susceptibility, Sarawak 2003

Localities	Strain / Species	Insecticides	LT50 (min)	24 h Mortality (%)
Kg. Chupak	<i>An leucosphyrus</i>	DDT 4%	23.27	100
		Permethrin 0.75%	21.58	100
		Lambda 0.05%	32.75	100
		Cyfluthrin 0.15%	20.83	100
		Malathion 5%	23.42	100
		Fenitrothion 1%	30.02	100
		Propoxur 0.1%	26.53	100

PERCENTAGE OF ESTERASE, INSENSITIVE ACETYLCHOLINERASE AND OXIDASES ACTIVITY IN MOSQUITO VECTORS OBTAINED FROM KG. TEBEKANG. DISTRICT OF SERIAN, SARAWAK

	Species	Highly Susceptible (%)	Susceptible	Resistant (%)	Highly Resistant (%)
Esterase	<i>Cx gelidus</i>	20	80	0	0
	<i>Cx quinquefasciatus</i>	100	0	0	0
	<i>Cx tritaeniorhynchus</i>	40	60	0	0
	<i>Ma bonneae</i>	66.67	33.33	0	0
	<i>Ae albopictus</i>	0	100	0	0
	<i>Ma uniformis</i>	100	0	0	0
AChE	<i>Cx gelidus</i>	90	0	10	0
	<i>Cx quinquefasciatus</i>	100	0	0	0
	<i>Cx tritaeniorhynchus</i>	100	0	0	0
	<i>Ma bonneae</i>	100	0	0	0
	<i>Ae albopictus</i>	0	60	40	0
	<i>Ma uniformis</i>	100	0	0	0
Oxidase	<i>Cx quinquefasciatus</i>	0	50	50	0
	<i>Cx tritaeniorhynchus</i>	0	25	75	0
	<i>Ma bonneae</i>	0	100	0	0
	<i>Ae albopictus</i>	0	33.3	16.7	50
	<i>Ma uniformis</i>	0	100	0	0

**PERCENTAGE OF ESTERASE, INSENSITIVE ACETYLCHOLINERASE AND
OXIDASES ACTIVITY IN MOSQUITO VECTORS OBTAINED FROM KG.
SEBINTIN, DISTRICT OF SERIAN, SARAWAK**

	Species	Highly Susceptible (%)	Susceptible (%)	Resistant (%)	Highly Resistant (%)
Esterase	<i>Culex tritaeniorhynchus</i>	0	100	0	0
	<i>An. donaldi</i> (larvae)	100	0	0	0
	<i>Cx spp.</i> (larvae)	0	100	0	0
AChE	<i>Cx tritaeniorhynchus</i>	100	0	0	0
	<i>An donaldi</i> (larvae)	100	0	0	0
	<i>Cx spp.</i> (larvae)	0	100	0	0
Oxidase	<i>Cx tritaeniorhynchus</i>	60	30	10	0
	<i>An donaldi</i> (larvae)	100	0	0	0
	<i>Cx spp.</i> (larvae)	100	0	0	0

**PERCENTAGE OF ESTERASE, INSENSITIVE ACETYLCHOLINERASE AND
OXIDASES ACTIVITY IN MOSQUITO VECTORS OBTAINED FROM KG.
CHUPAK, DISTRICT OF SERIAN, SARAWAK**

	Species	Highly Susceptible (%)	Susceptible (%)	Resistant (%)	Highly Resistant (%)
Esterase	<i>An leucosphyrus</i>	0	100	0	0
	<i>An. donaldi</i>	33.3	66.7	0	0
AChE	<i>An leucoshyrus</i>	100	0	0	0
	<i>An donaldi</i>	0	0	100	0
Oxidase	<i>An leucophyrus</i>	0	0	50	50
	<i>An donaldi</i>	0	33.33	66.66	0

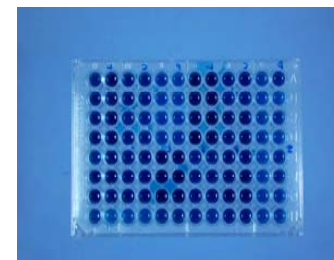
PERCENTAGE OF ESTERASE, INSENSITIVE ACETYLCHOLINERASE AND OXIDASES ACTIVITY IN MOSQUITO VECTORS OBTAINED FROM KG. TEPIN, DISTRICT OF SERIAN, SARAWAK

	Species	Highly Susceptible (%)	Susceptible (%)	Resistant (%)	Highly Resistant (%)
Esterase	<i>Cx tritaeniorhynchus</i>	0	100	0	0
	<i>Cq crassipes</i>	0	100	0	0
	<i>Ae albopictus</i>	50	50	0	0
	<i>Ma bonnae</i>	0	100	0	0
	<i>An letifer</i>	100	0	0	0
	<i>Cx pseudovishnui (larvae)</i>	50	50	0	0
	<i>Cx quinquefasciatus</i>	75	25	0	0
Esterase	<i>Cx tritaeniorhynchus</i>	100	0	0	0
	<i>Cq crassipes</i>	100	0	0	0
	<i>Ae albopictus</i>	100	0	0	0
	<i>Ma bonnae</i>	100	0	0	0
	<i>An letifer</i>	100	0	0	0
	<i>Cx pseudovishnui (larvae)</i>	100	0	0	0
Esterase	<i>Cx tritaeniorhynchus</i>	0	100	0	0
	<i>Cq crassipes</i>	0	100	0	0
	<i>Ae albopictus</i>	0	66.6	0	33.3
	<i>Ma bonnae</i>	0	100	0	0
	<i>An letifer</i>	0	100	0	0
	<i>Cx pseudovishnui (larvae)</i>	0	100	0	0

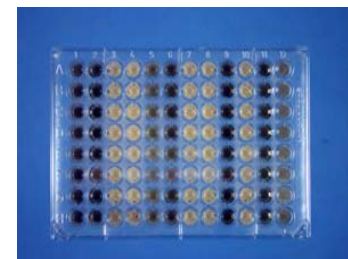
2007 Insecticide Resistant Test Results

STATE	No. of Test (No. of Localities)	Species Tested	Stage	Methods	Result
KEDAH	8 (6)	<i>Aedes albopictus</i>	Adult	Bio assay (6)	5 – 0% Mortality
PERAK	9 (9)	<i>Aedes</i>	Larva	Bio assay (8) Biochemical	1 - *0% Mortality 2 - 90% Mortality 5 - 100% Mortality 1 susceptible
SELANGOR	18 (18)	<i>Aedes aegypti</i> <i>Aedes albopictus</i>	Larva	Biochemical	45.5% HS / 40.9% S / 13.6% MR
MELAKA	4 (3)	<i>Aedes</i>	Larva	Bio assay	4 - 100% Mortality
JOHOR	7 (6)	<i>Aedes albopictus</i>	Larva	Bio assay	100% Mortality
TERENGGANU	11 (7)	<i>Aedes aegypti</i> <i>Aedes albopictus</i>	Larva	Bio assay	Susceptible
KELANTAN		<i>Aedes albopictus</i>	Larva (17)	Biochemical	1 Resistant OP.
SABAH	6 (5)	<i>Aedes aegypti</i> <i>Aedes albopictus</i>	Larva (2)	Bio assay	Susceptible

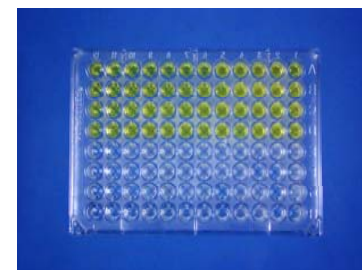
RAPID TEST KITS FOR DETECTION OF INSECTICIDE RESISTANCE



OXIDASE TEST



ESTERASE TEST



ACETYLCHOLINESTERASE TEST

Comprehensive Rapid Screening Kits for Insecticide Susceptibility (CRST for IS)

