A4 BIOCHEMISTRY OF ORGANOPHOSPHATE AND CARBAMATE RESISTANCE IN ANOPHELES NIGERRIMUS IN SRI LANKA

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Anopheline species common to malarious areas in Sri Lanka are under investigation for insecticides resistance development.

Among these, *Anopheles nigerrimus* is the most prevalent and is at present resistant to a range of organophosphate and carbamate insecticides. The

breeding and resting habits of the species suggest agricultural pesticide involvement as the sole source of selection pressure for resistance.

Biochemical studies - assays for general esterases, modified acetylcholinesterases, mixed function oxidases, glutathione-S-transferases, polyacrylamide gel electrophoresis and *in vivo* metabolism studies with C^{14} labelled malathion were used to investigate the mechanism(s) involved in multiple resistance to insecticides in ***An.nigerrimus***. The results indicate the involvement of the altered acetylcholinesterase(s) as the basis of multiple resistance rather than increased metabolism of the insecticides.

The selection of this type of mechanism has also led to an increase in the frequency of malathion and fenitrothion resistance in this species in the field over the last five years even though use of malathion and fenitrothion has been banned or curtailed from agricultural use since 1976.