

- 757 THE ORGANOPHOSPHOROUS INSECTICIDE CHLORPYRIFOS-METHYL RESTORES THE EFFICACY OF INSECTICIDE TREATED NETS IN AN AREA OF PYRETHROID RESISTANT ANOPHELINE AND CULICINE MOSQUITOES. N'Guessan R, Asidi A, Rowland MW, Curtis CF, Hougard JM, Corbel V, Lines JL, Darriet F, Chandre F, Zaim M. London School of Hygiene & Tropical Medicine, London, UK; LIN/IRD, Montpellier, France; Institut Pierre Richet, Bouake, Ivory Coast; World Health Organisation, Geneva, Switzerland.

Pyrethroid resistance in mosquitoes is becoming increasingly common in many areas of sub-Saharan Africa. This threatens to undermine the effectiveness of insecticide treated nets, the most important tool for preventing malaria in Africa. If present gains in malaria control are to be maintained it is necessary to identify alternative insecticides for use on nets within the next decade. Some members of the earlier generation of insecticides, the organophosphates and carbamates, while developed primarily for indoor residual spraying may have potential as net treatments. Comparative studies involving chlorpyrifos-methyl (CM), an organophosphate with an appropriately low mammalian toxicity, and lambda-cyhalothrin (L), a pyrethroid, were conducted in experimental huts in Bouaké, Côte D'Ivoire, West Africa. The anopheline and culicine mosquitoes in this particular area are resistant to pyrethroids owing to the high frequency of the *kdr* gene in both species, and are also partially resistant to organophosphates. Several treatments were compared: L at 18mg/m², CM at 100 and 250mg/m², a mixture of L and CM at 18 and 100mg/m² respectively, and a mixture of L and CM at a quarter of this concentration (L at 4.5 and CM at 25mg/m²). Chlorpyrifos-methyl was found to be highly effective at 100mg/m², killing 58% of anophelines and 65% of culicines within the huts, and reducing bloodfeeding through deliberately holed nets by 62% (anophelines) and 88% (culicines). Toxicity of the CM treatment

persisted after washing. Lambdacyhalothrin was also surprisingly effective. The most intriguing result was the high mortality (67%) and reduced feeding obtained with the low dose mixture, indicating a possible synergistic interaction between the two insecticides and a potential new treatment for managing insecticide resistance.

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