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## CHEMICAL ECOLOGY, AN ALTERNATIVE TO INSECTICIDES AS PART OF INTEGRATED VECTOR MANAGEMENT

### AUTHORS

ANDRIANJAFY MBOLATIANA TOVO / LABORATOIRE INTERNATIONAL ASSOCIÉ, CAMPUS AMPASAPITO, ANTANANARIVO

RAMANANDRAIBE VOAHANGY VESTALYS / UNIVERSITÉ D'ANTANANARIVO, PO BOX 906 ANTANANARIVO, ANTANANARIVO

MAVINGUI PATRICK / UNIVERSITÉ DE LA RÉUNION, 2 EME RUE MAXIME SAINTE CLOTILDE, LA RÉUNION, LA RÉUNION

LEMAIRE MARC / UNIVERSITÉ CLAUDE BERNARD LYON 1, 43 BD DU 11 NOVEMBRE 1918, BAT CPE,, 69622 VILLEURBANNE

### PURPOSE OF THE ABSTRACT

In recent years, a recrudescence of mosquito-borne diseases has been recorded worldwide, especially in tropical countries. Insecticides are effective and increasingly selective for the control of vectors but still induce unacceptable ecological consequences. The significant increase in resistance phenomena calls into question the overall viability of the approach. Female mosquitoes must have a blood meal for the growth and maturation of their eggs. They spot their hosts with kairomones, molecules emitted by the skin of animals and humans. The close and selective interactions between host, vectors and infochemical molecules offer new possibilities for chemical ecology as biocontrol and alternative to insecticides. We have initiated the search for attractant and repellent molecules that can be used as bait in specific traps and protect exposed populations with low ecological impacts. We have also developed a new, more reliable, fast, low-cost, and near-natural bioassay method for measuring the effectiveness of these molecules. It has been used successfully on molecules known for their attractive properties: isovaleric acid, 1-octen-3-ol and repellents: picaridine and DEET on mosquito populations: *Culex quinquefasciatus* and *Aedes albopictus*. We are currently developing a new family of active compounds: coumarins while seeking chemical synthesis methods more respectful of the environment. Tests performed in our facility have shown that some coumarin derivatives do indeed have repellent activities but others have a strong attracting activity on *Aedes albopictus*. In natura tests using sentinel traps confirmed these effects.

## FIGURES

FIGURE 1

FIGURE 2

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### KEYWORDS

Chemical ecology | Vector control | Insecticides | attractant and repellent

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