

Accepted Manuscript

Title: Synergistic agent and intracellular calcium, a successful partnership in the optimization of insecticide efficacy

Authors: Caroline Deshayes, Eléonore Moreau, Javier Pitti-Caballero, Josy-Anne Froger, Véronique Apaire-Marchais, Bruno Lapied



PII: S2214-5745(18)30089-0
DOI: <https://doi.org/10.1016/j.cois.2018.09.007>
Reference: COIS 517

To appear in:

Please cite this article as: Deshayes C, Moreau E, Pitti-Caballero J, Froger J-Anne, Apaire-Marchais V, Lapied B, Synergistic agent and intracellular calcium, a successful partnership in the optimization of insecticide efficacy, *Current Opinion in Insect Science* (2018), <https://doi.org/10.1016/j.cois.2018.09.007>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Synergistic agent and intracellular calcium, a successful partnership in the optimization of insecticide efficacy

Caroline Deshayes, Eléonore Moreau, Javier Pitti-Caballero, Josy-Anne Froger, Véronique Apaire-Marchais, Bruno Lapied

Laboratoire Signalisation Fonctionnelle des Canaux Ioniques et Récepteurs (SiFCIR), UPRES-EA 2647, USC INRA 1330, SFR 4207 QUASAV, UFR Sciences, Université d'Angers, 2 boulevard Lavoisier F-49045 Angers cedex, France.

Short title: Synergistic agent-induced optimization of insecticide efficacy

Highlights

- Resistance results in measurable reduction in the relative efficacy of insecticides
- Activation of calcium-dependent intracellular pathways increases target sensitivity
- Synergistic agents increase insecticide efficacy through intracellular calcium rise
- Synergistic agent/insecticide mixture optimizes treatment at low concentrations

Abstract (100-120 words)

Integrated Pest Management and Integrated Vector Management worldwide are developed in agriculture and public health to counteract and limit the exponential increasing development of insect resistance to insecticides. However, facing the predominance of some resistant populations, new strategies are urgently needed to target resistant insects. An innovative approach lies in the optimization of commonly used insecticides when combined with chemical or biological synergistic agents. By an increase of intracellular calcium concentration followed by activation of calcium-dependant signalling pathways, the synergistic agents are able to indirectly increase target sites sensitivity to insecticide by inducing conformational change. The synergistic agents are of great interest in optimizing the efficacy of insecticides and in overcoming resistance mechanisms.

Introduction

Neuroactive insecticides have been used widely over the five past decades for pest management and vector control. Since dichlorodiphenyltrichloroethane (DDT) was introduced in the 1940s,

Download English Version:

<https://daneshyari.com/en/article/11031762>

Download Persian Version:

<https://daneshyari.com/article/11031762>

[Daneshyari.com](https://daneshyari.com)