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Exposure to sublethal doses of insecticide and their effects on insects at cellular and physiological levels.

Alexandre Bantz, Jérémy Camon, Josy-Anne Froger, Delphine Goven and Valérie Raymond[#]

Address : *Laboratoire « Signalisation Fonctionnelle des Canaux Ioniques et Récepteurs » (SiFCIR), UPRES-EA2647 USC INRA 1330, SFR 4207 QUASAV, UFR Sciences, Université d'Angers,*

2 Bld Lavoisier, 49045 Angers Cedex 01, France.

[#] corresponding author : Valérie Raymond (valerie.raymond@univ-angers.fr)

Highlights:

- Exposure to sublethal dose of insecticides induces life history trait changes.
- These physiological changes are linked to gene expression modifications.
- Gene expression is modified by epigenetic mechanisms.
- All these changes are transmitted over generations.

Abstract

Insecticides were used as pest management tools for a long time. The appearance of resistant insects has led the scientific community to rethink their use and to study the mechanisms underlying the resistance in order to circumvent it. However, we know now that sublethal doses of insecticide induce many effects which should be taken into account for pest control. In this review, we summarized current knowledge on mechanisms used by insects to deal with exposure to sublethal dose of insecticides. Physiological and cellular changes could contribute to the adaptation of the insect to its environment making the challenge of managing pests difficult.