Influence of cellular and molecular factors on membrane target sensitivity to insecticides

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Résumé en anglais	The effective control of insect pests is based on the use of insecticides. Most of these compounds act on molecular targets in the insect nervous system. However, the large-scale deployment of insecticide treatment has led to the development of resistance, which decreases insecticide efficacy. Although the resistance mechanisms are largely studied today, this review aims to point out new insights on the less-known cellular and molecular factors involved in the modulation of the sensitivity of the targets to insecticides. This review will focus on the phosphorylation/dephosphorylation process, the post-transcriptional events such as editing and alternative splicing and the influence of the association with auxiliary proteins of the receptors and/or ion channels targeted by insecticides. In addition, the involvement of calcium-dependent signaling pathways in the modulation of the sensitivity of the target to insecticides will also be considered and discussed. Finally, this review will insist on different strategies proposed to optimize the efficacy of insecticide treatment while reducing doses to decrease side effects on environment and on non-target organisms by combining two different chemical insecticides or a given active ingredient associated with biological and/or chemical synergistic agents. This review is part of the special issue "Insecticide Mode of Action: From Insect to Mammalian Toxicity".
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Liens
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[2] http://okina.univ-angers.fr/delphine.goven/publications
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