



Microbial Pest Control Agents: Are they a specific and safe tool for insect pest management?

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Mots-clés	Bacteria [7], Bioinsecticides [8], ecotoxicology. [9], environmental persistence [10], fungi [11], toxicology [12], virus [13]
Résumé en anglais	<p>Microorganisms (viruses, bacteria and fungi) or their bioactive agents can be used as active substances and therefore are referred as Microbial Pest Control Agents (MPCA). They are used as alternative strategies to chemical insecticides to counteract the development of resistances and to reduce adverse effects on both environment and human health. These natural entomopathogenic agents, which have specific modes of action, are generally considered safer as compared to conventional chemical insecticides. Baculoviruses are the only viruses being used as the safest biological control agents. They infect insects and have narrow host ranges. <i>Bacillus thuringiensis</i> (Bt) is the most widely and successfully bioinsecticide used in the world in the integrated pest management programs. Bt mainly produces crystal delta-endotoxins and secreted toxins. However, the Bt toxins are not stable for a very long time and are highly sensitive to solar UV. So genetically modified plants that express toxins have been developed and represent a large part of the phytosanitary biological products. Finally, entomopathogenic fungi and particularly, <i>Beauveria bassiana</i> and <i>Metarhizium anisopliae</i>, are also used for their insecticidal properties. Most studies on various aspects of the safety of MPCA to human, non-target organisms and environment have only reported acute but not chronic toxicity. This paper reviews the modes of action of MPCA, their toxicological risks to human health and ecotoxicological profiles together with their environmental persistence. This review is part of the special issue "Insecticide Mode of Action: From Insect to Mammalian Toxicity."</p>
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