Biocontrol Potential of Cell-Free Supernatants of Different Endosymbiotic Bacteria Isolated from Entomopathogenic Nematodes on Galleria Mellonella L. (Lepidoptera Pyralidae)

Ebubekir Yüksel
Department of Plant Protection, Faculty of Agriculture, Erciyes University, Kayseri, Türkiye

Abstract:

Today, biological control methods are gaining importance to ensure sustainability in agriculture and protect both humans and the environment. Entomopathogenic nematodes (EPNs) and their bacterial endosymbionts (BESs) are emerging bio-control agents in sustainable pest control approaches. In the present study, the contact toxicity of cell-free supernatants (CFSs) of BESs (*Xenorhabdus bovienii* MCB-8 and *Photorhabdus luminescens* subsp. *kayaii* AVB-15) isolated from EPNs was evaluated against the last instar *Galleria mellonella* L. (Lepidoptera Pyralidae) larvae under controlled conditions (25±1°C, relative humidity of 65±5%, and 12 hours light and dark photoperiods). The CFSs of both BESs provided mortalities over 50% 72 hours post-treatments. Moreover, the mortality rates of *G. mellonella* reached 80% and 86% after 96 hours of exposure to *X. bovienii* MCB-8 and *P. luminescens* subsp. *kayaii* AVB-15, respectively. The results revealed that these BESs of EPNs were highly effective against *G. mellonella* larvae under controlled conditions. However, further studies in field conditions are required to understand to uncover their field control potential.

Keywords:

Symbiotic bacteria, the greater wax moth, entomopathogens.