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Virus before oligonucleotide-vent to apoptosis (VOVA) effect as a promising tool for more effective use of baculoviral preparations

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In our studies concerning the elaboration of DNA insecticides, we found that topically applied antisense oligoRING (5'-CGACGTGGTGGCACGGCG-3') from conservative region of IAP-3 (inhibitor of apoptosis) gene of *Lymantria dispar* multicapsid nuclear polyhedrosis virus (LdMNPV) causes significantly higher mortality of *Lymantria dispar* caterpillars and decrease of host *IAP-1* gene expression in LdMNPV-infected insect cells. Also using DNA ladder assay for apoptosis detection we found that oligoRING triggers stronger apoptotic processes in infected insect cells in comparison with water-treated control and groups with control oligonucleotides. Demonstrated insecticidal effect of the oligoRING on LdMNPV-infected *Lymantria dispar* has also been observed in our investigations with LdMNPV-infected *Lymantria monacha* and LdMNPV-infected *Cydalima perspectalis*. We decided to term this phenomenon described for 3 lepidopteran pests as VOVA (Virus before Oligonucleotide-Vent to Apoptosis) effect. Of note, we could not reach VOVA effect with LdMNPV and oligoRING on dipteran *Drosophila melanogaster* and coleopteran *Leptinotarsa decemlineata* what shows specificity of VOVA effect/many lepidopteran pests in horticulture and forestry are successfully controlled by application of baculoviruses. Baculoviral preparations have proven to be selective and expensive, acting effectively but slowly. The slow action of a baculovirus is associated with a latent period in the life cycle of the virus. Discovered insecticidal effect of the viral oligoRING on LdMNPV-infected *L. dispar, L. monacha, C. perspectalis* is a fundamental finding for a host-virus system that could be applied in biologically based insect pest management together with baculoviral preparations to provide more effective and faster action of the latter.

Biography

Nyadar Palmah is currently a Postgraduate student under the supervision of Oberemok Volodymyr at the V.I. Vernadsky University, Simferopol, Crimea.

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