

Biological and molecular characterization of Baculoviruses breaking CpGV resistance

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Codling moth (CM, *Cydia pomonella* (Lepidoptera)) is a serious insect pest of apples, pears and walnut. Since many years, isolates of *Cydia pomonella* granulovirus (CpGV) are used as effective agents to control this pest. But in 2005, the first CM larvae, resistant to the commercial used virus CpGV-M (family Baculoviridae), were found and mean-while more than 40 orchards in Europe with CpGV resistance were identified.

Further studies showed that there are three types of CpGV resistance. Type I resistance is inherited in a dominant and Z-chromosome linked way and directed against CpGV-M, whereas the type II resistance is dominant and autosomally inherited. It is directed against CpGV-M and CpGV-S. A third type has a mixed Z-chromosomal and autosomal inheritance.

There are only few CpGV isolates, such as CpGV-E2, which are able to break the different forms of resistance. Therefore, it is important, to search for other resistance breaking Baculoviruses. Recently, a novel Alphabaculovirus CrpeSNPV, which was isolated from the litchi moth *Cryptophlebia peltastica*, had been shown to be effective against CM larvae.

To test the efficacy of CrpeSNPV against resistant CM strains, full range bioassays were performed and the LC₅₀ value was calculated. In addition, time mortality response was recorded to compare the speed of killing between CrpeSNPV and other CpGV isolates.

Furthermore, experiments with the *C. pomonella* cell line Cp14R were conducted to obtain more information about the in vitro replication capacity of this new Alphabaculovirus.