

EFFECT OF PHAGES ISOLATED FROM DIFFERENT SOURCES AGAINST FIRE BLIGHT PATHOGENSamoilova A.*Institute of Genetics, Physiology and Plant Protection, Republic of Moldova*

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Fire blight of rosaceous plants is one of the economically most important diseases of fruit trees caused by the bacterium *Erwinia amylovora*. Plants are extremely vulnerable for fire blight infection at the bloom stage. Blossom blight can lead to the great crop losses and even the plant death. Since chemical treatments are forbidden in time of blossoming, bacteriophages, highly specific bacterial viruses could be used for the disease control. Being the natural components of ecosystems, phages infect only bacteria sensitive to them, are non-toxic to plants, animals and humans and are adapted to the bacteria environment.

It has been shown that bacterium *E. amylovora* expresses its major pathogenicity factors during immature pear tissues infection. Therefore, in this study, the ability of four virulent *E. amylovora* bacteriophages, isolated from the aerial parts of the affected plants (phage isolate 1 from quince tissues; phage isolate 2 from hawthorn, Republic of Moldova) and from natural water reservoirs near fruits orchards or wild rosaceous trees (phage isolates 3 and 4, Swiss Confederation) to inhibit *E. amylovora* growth in the immature pear tissues was evaluated.

Immature pear slices were inoculated with suspensions of *E. amylovora* CFBP1430 and EaM contained 10^6 CFU/ml. After four hours incubation in the humidified chamber at 28°C infected immature pear slices were treated with 10^7 PFU/ml of phage isolates. Pear slices, treated with sterile distilled water were used as a control. Symptoms were recorded at 1, 2, 3, 5, 6, 7 and 8 days after inoculation. For each bacteria strain/phage isolate combination tested pear slices were assayed in triplicate and each experiment was repeated at least two times.

Immature pear slices infected with bacteria EaM displayed the first symptoms of the fire blight, ooze formation and light necrosis, one day after inoculation. Pear slices, infected with *E. amylovora* CFBP1430 demonstrated ooze and necrosis two days after inoculation.

In the bacteria/phage combinations the first symptoms of the fire blight appeared on the sixth day after inoculation in the variants of EaM/phage isolate 3 and CFBP1430/phage isolate 3. On the seventh and eighth days after inoculation symptoms of the fire blight infection have been recorded in the EaM/phage isolate 2 and CFBP1430/ phage isolate 2, respectively. Bacteria/phage combinations EaM/phage isolate 4 and CFBP1430/ phage isolate 4 showed disease symptoms on the seventh day after inoculation. Immature pear slices in the variants EaM/phage isolate 1 and CFBP1430/phage isolate 1 showed necrotic lesion eight days after inoculation. Thus, phage isolate 4, detected in water was able to suppress growth of phytopathogenic *E. amylovora* just a day less than highly virulent phage isolate 1 detected in the quince tissues.

The conducted experiments have demonstrated that bacteriophages isolated from water revealed high efficacy against bacteria *E. amylovora* and all studied phage isolates successfully inhibited the fire blight causative agent growth in the plant host tissues for about seven days. Hence it has been shown that treatment with bacteriophages for the fire blight control in the fruit orchard should be carried out weekly if environmental conditions are favorable for the disease development.

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