

TERMS OF THE VIABILITY OF *LACTOBACILLUS PLANTARUM* INTRODUCED IN TO THE SOIL AND ON THE SURFACES OF PLANTS

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An alternative of chemical methods to control pathogens is the use of bacteria-antagonists and their metabolites and bacteriophages. The lactic acid bacteria attach to the surface of plant, colonize it and actively affect on pathogens due to the synthesis of a wide range of antagonistic substances. In the soil lactobacilli stimulate the formation of humus, activate the soil microbiota representatives, and as a result substances necessary for plant nutrition are released in soil. These substances and lactic acid bacteria *L. plantarum* are completely safe for humans and the environment. That is why applying lactobacilli in plant protection is a safe replacement of chemical treatments against pathogens.

The viability in soil and on the surfaces of plants is a principal indicator of the quality of preparation for plant protection based on lactobacilli. Thus the purpose of investigation was to identify the ability of *L. plantarum* to survive in soil and on the surface of plants.

The *L. plantarum* ONU 12 strain used in this study was initially isolated from grapes, and in previous investigations it has shown inhibitory effect on crown gall *in vivo*. To study the ability to survive on the surfaces of plants, the suspension of *L. plantarum* ONU 12 was applied to the surface of the leaves of *Kalanchoe daigremontiana* Mill at a concentration of 10^{10} CFU/ml in a volume of 1 ml per 25 cm² surface plants. The bacteria were washed out from the surface after 15 minutes after application and after 2nd, 3rd, 8th, 14th and 30th days.

It was determined that artificially applied lactobacilli were detected in suspensions washed from the leaves in a term less than 30 days. All this time the studied bacteria or part of them were present in phyllosphere, out of biofilms formed with a dense matrix from which bacteria is not always possible to wash out by conventional methods of washings.

The survival term of the *L. plantarum* ONU 12 in soil under the different conditions of existence - in the presence of *Kalanchoe* and without it was also tested. The studied strain was well adapted to environmental conditions and proved the viability in soil for 16 days (index CFU/ml in sample test ranged from $2,0 \pm 0,5 \times 10^5$ to $5,0 \pm 0,5 \times 10^3$). The conditions for the growth of lactobacilli were more favorable under the presence of plants in soil.