ANTAGONISTIC ACTIVITY OF *LACTOBACILLUS PLANTARUM* AGAINST CROWN GALL AGENT

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Lactobacilli are known for a wide range of antagonistic properties. Therefore application of these bacteria for protecting plants against pathogens is a perspective trend.

The aim of this work was to study the effect of *L. plantarum* cultures against agent of crown gall *R. radiobacter.*

The strains of lactobacilli isolated from grape must were initially investigated for their morphological and growth characteristics. Morphology of bacteria and colonies, lactic fermentation indicated that the studied microorganisms belonged to lactic acid bacteria.

To confirm this, the polymerase chain reaction with primers for species-specific gene site *plnN* of *L. plantarum* was performed (Ben Omar, 2008). It was found that all investigated strains possessed gene *plnN*.

Antagonistic properties of 15 strains of *L. plantarum* first were studied in experiments *in vitro* by well-diffusion method. All strains inhibited the growth of pathogens. Only culture fluid with native pH (3,92 - 4,3) had antagonistic activity. Neutralized culture fluid didn't inhibit pathogens that indicated that antagonistic effect was caused by the action of organic acids.

Big amount of *L. plantarum* strains caused inhibition of crown gall agent in large and medium extent (40,0% and 46,7%, respectively).

Investigated lactobacilli strains showed clear antagonistic effect against crown gall agent on the models of carrot explants of and *Kalanchoe* plants.

This capability was strain specific, because different strains of one species showed more or less antagonist activity *in vivo* and *in vitro*.

In *Kalanchoe* all investigated lactobacilli strains showed a high level of protection against crown gall: inhibition of the disease varied between 86,7% and 100%. In explants of carrot, 26,6%-66,7% of the strains exhibited high and middle levels of plant surfaces protection. If the tumors in carrots explants were formed, the area of affected surface treated with lactobacilli was much smaller than in the positive control inoculated only with the pathogens.

The obtained results indicate that *L. plantarum* are the perspective microorganisms for protection plants against crown gall.