



INFLUENCE OF CULTIVATION CONDITION FOR ORGANIC ACIDS PRODUCTION BY LACTOBACILLUS PLANTARUM

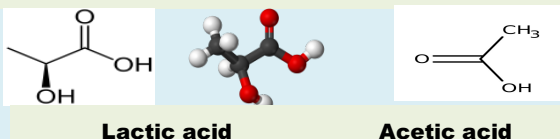
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The purpose of this study was to investigate the effect of cultivation conditions on the synthesis of organic acids by *L. plantarum* strains and their effect on the antagonistic activity against phytopathogenic microorganisms

Phytopathogenic bacteria cause many different plant diseases in agriculture. The use of pesticides and chemical fungicides is the main method of controlling phytopathogenic microorganisms. One of the alternative trends in biological plant protection is the development and use of biological products based on bacterial antagonists, which synthesize a wide range of metabolites active against bacteria and fungi that cause plant diseases in agriculture. Lactic acid bacteria have a strong antagonistic effect against phytopathogenic bacteria as a result of the synthesis of organic acids, hydrogen peroxide, bacteriocins, short-chain fatty acids. The synthesis of metabolites depends not only on the individual characteristics of the strain-producer, but also on the cultivation conditions - the pH and composition of the medium, temperature and time of cultivation



Materials : Four *L. plantarum* strains, that have a wide spectrum of antagonistic activity towards phytopathogenic bacteria were used.

Methods : microbiological and statistical

1. Optimization of physical parameters of cultivation

pH of nutrient medium (6,8 and 7,8)

Temperature of cultivation(+30±1 and +37±1 °C)

Time of incubation (24, 48 and 72 год)

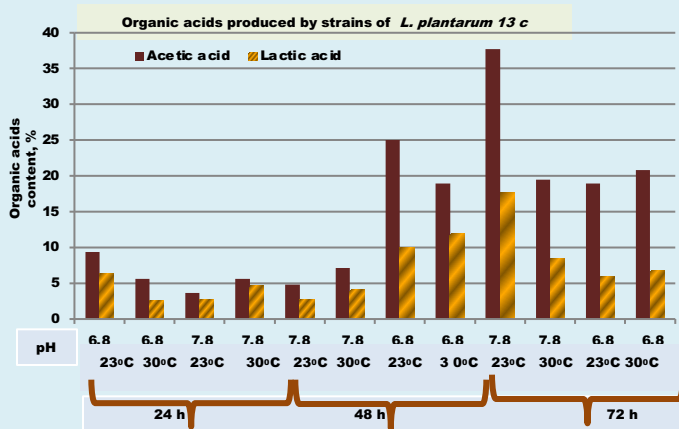
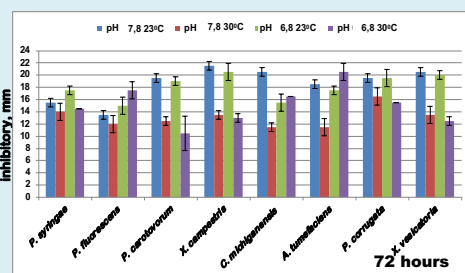
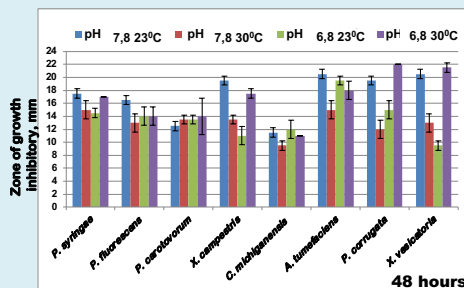
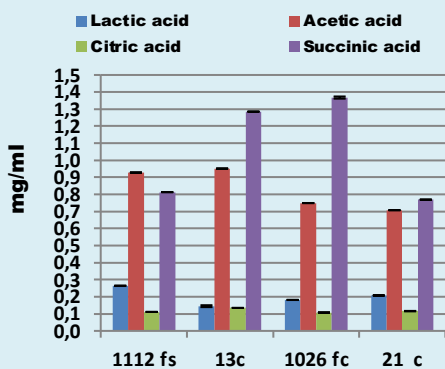
2. Investigation of qualitative and quantitative composition of organic acids of cell-free supernatant of *L. plantarum* strains

3. Investigation of the role of organic acids in the manifestation of antagonistic activity of *L. plantarum* strains

Structures of composition

Variables *			
No composition	pH	Temperature	Time
1	7,8	23	24
2	7,8	23	48
3	7,8	30	48
4	6,8	23	24
5	6,8	30	24
6	6,8	23	48
7	7,8	23	72
8	7,8	30	24
9	7,8	30	72
10	6,8	23	72
11	6,8	23	24
12	6,8	30	72

Antagonistic activity of the strain *L. plantarum* 13c against phytopathogenic bacteria on the optimized medium



Conclusions. Among organic acids, all strains of *L. plantarum* synthesized the largest amount of succinic acid 0.8-1.3 mg/ml. The highest antagonistic activity of the strain *L. plantarum* against phytopathogenic bacteria was highest at time 72 hours and 23°C and zones of growth inhibition of the indicator strains was 18,62± 0.5mm. Optimum pH of medium, temperature and time of cultivation for production of acetic acid for *L. plantarum* 13c strain were pH 7.8, time 72 hours and 23°C.