

«Pathogen-1» Experiment

AGGRESSION OF PATHOGENIC BACTERIA IN MICROGRAVITY

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Considering that aggressiveness of bacterial populations depends on many factors of bacteria habitat, it is planned to study the influence of space flight factors on aggressiveness of the pathogen bacterium population.

The main objectives are as follows:

- to select the struck plants;
- to identify activators of diseases of plants;
- to identify phytopathogenic isolates;
- to select plants-indicators to establish pathogenicity of bacterial isolates;

— to study the aggressiveness of both the bacterial populations, which cause the given diseases, and the pathogenic strains clones.

The classical methods of microbiology and plant pathology will be used.

Obtained data will enrich our knowledge on the mechanisms of changes in aggressiveness and pathogenicity of the microbial populations. These data will enable working out the methods of restriction of development of plant diseases not only in space flight but also on Earth.

«Pathogen-2» Experiment

AGGRESSION OF XANTHOMONAS CAMPESTRIS IN MICROGRAVITY

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The purpose of the experiment is to study the influence of microgravity on rice plants infected with *Xanthomonas campestris* [1, 2].

The main objectives are as follows:

- to study the ultrastructure of epidermal, xylem and mesophyll cells of rice plants infected with *X. campestris*;
- to determine a relative content of callose and cellulose in cell walls of leaf tissues;
- to study the Ca^{2+} localisation and its relative content in plant cells;
- to study activity and localisation of peroxidase and 1, 3- β -glucanase in plant cells.

The methods of light microscopy, electron micros-

copy, cytospectrophotometry, immunocytochemistry and molecular biology will be used.

The responses of induced defence of rice plants infected with *X. campestris* will be established at the tissue, cellular and molecular levels, in order to understand the mechanisms of interactions of a plant cell and pathogen in microgravity.

References:

1. Guo A., Leach J. // Phytopathology.—1989.—79, N 4.—P. 433—436.
2. Chambers A., Ryba-White M., Hilaire E., et al. // Gravitational and Space Biol. Bulletin.—1998.—12, N 1.—P. 19.