

## Relevance of industrial cultivation of probiotic microorganism *Lactobacillus rhamnosus* GG

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**Introductions.** In Ukraine, the production of probiotics is still significantly inferior to foreign enterprises. These drugs are produced only at one Biopharma factory, the rest of the products on the market are foreign analogues

**Materials and methods.** Analysis of modern data on the technological and probiotic properties of *Lactobacillus rhamnosus* GG (LGG), media and cultivation features, technologies for obtaining a probiotic preparation based on lyophilized LGG biomass.

**Results and discussion.** Today, representatives of the genus *Lactobacillus* are among the microorganisms that most satisfy probiotic requirements. Among quite a large number of probiotic microorganisms of this genus, we will stop at *L. rhamnosus* GG - a gram-positive bacterium belonging to the genus *Lactobacillus*, family *Lactobacillaceae*. It is of human origin, has sufficient antagonistic activity in relation to pathogenic and opportunistic organisms, is resistant to the action of acids and enzymes of the gastrointestinal tract, has good adhesion, stable genetic characteristics and has no antigenic properties in relation to the human body and belongs to GRAS representatives. The key factor in choosing a biological agent was the scientifically confirmed data that LGG is the only strain of lactobacilli that reduces the duration of rotovirus infection by stimulating the synthesis of immunoglobulin A.

The selection of a nutrient medium is one of the main factors that determines the possibility of industrial cultivation of microorganisms. It should be remembered that lactobacilli are auxotrophic organisms and are therefore very picky about artificial nutrient media. The medium with the following composition (g/l) turned out to be the most optimal in terms of cost and cultivation time: Glucose - 20, K<sub>2</sub>HPO<sub>4</sub> - 11.3, yeast extract - 10, peptone -10, KH<sub>2</sub>PO<sub>4</sub> -4.6, MgSO<sub>4</sub> • 7H<sub>2</sub>O - 0.2, MnSO<sub>4</sub> • 4H<sub>2</sub>O - 0.05, Tween 80 - 1 ml. Cultivate for 24h at a temperature of 37°C, without access of oxygen. According to the literature, this environment allows to increase the survival of lactobacilli during freeze-drying up to 80%. Specifically, in the state of lyophilisate, probiotics are part of many drugs, nutritional supplements or food products

Based on the physiological and biochemical characteristics of the biological agent, the cultivation of *Lactobacillus rhamnosus* GG is carried out periodically in a deep method without access to oxygen, ensuring aseptic performance of the process without feeding and with nitrogen purging to ensure sterile conditions.

**Conclusions.** The development of a complete technological process for the production of probiotics is relevant for the Ukrainian market, because it is dominated by over-the-counter preparations. It is proposed to use LGG as a biological agent, It reduces the duration of rotovirus because it stimulates the synthesis of IgA.

### References

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