

## STUDYING THE SENSITIVITY OF *LACTOBACILLI* TO ANTIBIOTICS

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Lactobacilli are a natural part of the digestive tract microbiota and play a key role in ensuring the normal functioning of the gut as well as supporting the immune system (Dieterich, Schink, Zopf, 2018).

Lactobacilli help to maintain the balance of microorganisms in the gut, preventing the spread of harmful bacteria. They promote digestion, i.e. help to break down and absorb nutrients in herbivores, which helps to maintain optimal health and improve livestock performance. They also support the immune system (Kozlovska et al., 2011; Matzaras, Nikopoulou, Protonotariou, Christakia, 2022).

As for the resistance of lactobacilli to antibiotics, many of them are sensitive, especially to drugs with a broad spectrum of effect. Therefore, if an animal is administered antibiotics, it can affect the balance of intestinal microflora, including lactobacilli, which can lead to dysbiosis and other intestinal health problems (Skibitsky and Kozlovska, 2011).

For lactobacilli to have a positive impact on animal health, it is important to use antibiotics rationally and provide a balanced diet that helps maintain the intestinal microflora. Probiotics containing lactobacilli can also be used to restore and maintain the health of the gut of animals during antibiotic therapy (Matzaras, Nikopoulou, Protonotariou, Christakia, 2022).

The aim of our work was to investigate the sensitivity of lactobacillus strains to antibiotics.

The material for the study was strains of *Lactobacillus casei* and *Lactobacillus acidophilus* isolated from clinically healthy calves of 20-30 days of age.

All studies were carried out in the laboratory of sanitary and food microbiology of the Department of Epizootology, Microbiology and Virology of the NULES of Ukraine. The sensitivity of the studied strains of microorganisms to antibiotics was determined by the agar diffusion method (disk method).

According to the culture and morphological characteristics, the experimental strains of lactobacilli corresponded to the generally accepted ones, in particular *L. casei* - gram-positive, non-motile, non-spore-forming rods of various lengths, 0.5-0.7  $\mu\text{m}$  wide, single or arranged in chains. On agar with hydrolysed milk, white colonies with a diameter of 1 mm were formed in the form of "boats" or discs. In hydrolysed broth, they grew with the formation of homogeneous turbidity and fine sediment. The *L. acidophilus* strain was a Gram-positive rod, 0.9 - 1.0 x 3.0 - 8.5  $\mu\text{m}$  in size, stationary, did not form spores, located singly or in chains of 2 - 5 cells, sometimes formed long filamentous cells. In the depths of the agar with hydrolysed milk (HM), white colonies with a diameter of 1.5-2.0 mm in the form of "spiders" or round colonies with a denser centre and a jagged edge were formed, surface growth in the form of wavy colonies. In the hydrolysed broth and liquid medium, MRSA grew with the formation of a fine sediment on the bottom and walls of the test tube.

The results of the study of the sensitivity of lactobacilli to antibiotics by the disc method showed a different degree of sensitivity. All strains tested showed the highest resistance to itraconazole and cefepime. In addition, *Lactobacillus casei* strain was resistant to oxacillin, cephalexin, ceftrofur, polymyxin, cefazolin; *Lactobacillus acidophilus* strain was resistant to ciprofloxacin, oxacillin.

Based on the results of the study, several predictions can be made about the use of these lactobacillus strains:

•Application in probiotics: The strains of *Lactobacillus casei* and *Lactobacillus acidophilus*, which have shown resistance to various antibiotics, may be useful for inclusion in probiotics. They can help restore the microbiome of the digestive tract and provide protection against the development of certain infectious diseases.

•Use in food technology: The strains that have shown resistance to antibiotics can be used in fermentation processes during the production of dairy products such as yoghurt or kefir. They can help maintain product stability and compete with harmful microorganisms.

•Careful use of antibiotics: Knowledge about the sensitivity of lactobacilli to antibiotics can also help in the production of dairy products, in order to avoid the negative impact of antibiotics on the beneficial microflora.

In any case, it is important to conduct additional research and consider the context to determine the optimal use of these lactobacillus strains.

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