

CHANGES IN SENSITIVITY TO METHICILLIN AT MRSA UNDER THE INFLUENCE OF LACTOBACILLI EXOMETABOLITES

Korotkykh O.O.¹, Kalinichenko O.M.², Babich E. M.¹

¹SE “Mechnikov Institute of Microbiology and Immunology of the NAMS of Ukraine”, Kharkiv, Ukraine

²The National University of Pharmacy, Kharkiv, Ukraine
microbiology@nuph.edu.ua

Modern industrial technologies of cultivation of agricultural animals, birds, fish suggest widespread using of antibiotics, which are not only used for the treatment and prevention of various diseases of bacterial etiology, but also as feed additives, stimulating the growth and development of young animals, increase safety and productivity of livestock. However, antibiotics are used for these purposes accumulate in excessive amounts in foods - meat, milk, eggs, posing a threat to human health, causing dysbiosis, allergies and reducing immunity. Moreover, antibiotic therapy which is used for decades to treat bacterial infections has led to the emergence and spread of antibiotic-resistant strains. Therefore, in the developed countries more and more attention is paid to the development and implementation of alternative methods of prevention and treatment of bacterial infections.

One of the alternative replacement ways are pro-, pre- and synbiotics. They have a wide spectrum of antagonistic activity and help restore normal flora and colonization resistance of the mucous membranes.

The aim of the work was to study the effect of lactobacilli exometabolites for resistance to oxacillin at methicillin-resistant strains of *Staphylococcus aureus* (MRSA).

Strains of MRSA were isolated from healthy bacteria carriers among medical staff, co-cultured with lactobacillus exometabolites. Sensitivity to methicillin was determined by disco-diffusion method.

It is established that after 3 passages in medium with exometabolites zone of growth inhibition around the disc with an antibiotic in 46.3% of the strains varied from 0 mm to $7,3 \pm 2,6$ mm. After 5 passages in medium with lactobacilli exometabolites 62,8% MRSA become sensitive to methicillin (zone stunting ≥ 13 mm) and 8.6% of the strains were killed. After 10 passages, the number of dead strains was 21.4% and the number of strains have become sensitive to methicillin - 78.3%. Only one strain does not change its sensitivity.

Thus, the antimicrobial substance secreted by the lactobacilli could be used as alternative means for sanitation bacillicarriers aureus.