

**THE CORRECTIVE EFFECT OF CAROTENEPRODUCED YEAST  
*PHAFFIA RHODOZYMA* BIOMASS ON INTESTINAL MICROBIOCENOSIS FORMATION OF  
DUCKS**

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During husbandry of the numerous groups of poultry on one territory, infectious agents are accumulated and activated in population. It is known that the environmental microflora influences the intestinal microbiocenosis, especially in the first days of life of young poultry. Further, condition of intestinal microflora influences metabolism and health of poultry. In case of impairment of intestinal microflora, it is necessary to carry out therapeutic measures. To control pathogenic microorganisms, antibiotics that inhibit the development of not only pathogens but also normal intestinal microflora leading to dysbacteriosis are used. World experience with antibiotics has shown that there is no need to use any preventive control measures to destroy pathogenic microflora. Prevention and treatment of diseases caused by opportunistic and pathogenic microorganisms should be carried out stimulating natural resistance of microorganism. One of the promising areas in this is the use of probiotics.

In terms of efficiency of action, probiotics is not inferior to some antibiotics and chemotherapeutic agents. At the same time they have no negative influence on the microflora of the digestive tract, do not pollute livestock products and environment, meaning they are environmentally friendly. The use of probiotics is safe for people who consume livestock products. Probiotics not only normalize the composition of intestinal microflora, but also increase the productivity of animals. Our previous studies have shown that the use of yeasts under dysbiosis in rats positively influences the intestinal microflora composition and metabolism of animals. Analysis of the literature data shows that yeast cells have complex mechanisms of influence on intestinal microflora and the state of the microorganism. In particular, they prevent colonization of the gastrointestinal tract by pathogens, stimulate growth of endogenous lacto- and bifidobacteria, adsorb mycotoxins, change the redox potential of near-epithelial layer of the intestine, increase enzymatic activity of the digestive tract, synthesis of lactase, maltase and saccharase. Fragments of the yeast cell wall stimulate a weak immune system of young animals and poultry. They modulate the activity of cells of the immune system, increasing body resistance to infections.

Therefore, the purpose of this study was to investigate the possibility of using biomass of carotene-synthesizing yeasts *Phaffia rhodozyma* for the correction of intestinal microflora composition in critical periods of growth and development of poultry, in particular ducks.

**Materials and methods.** To implement settled task, experiment under conditions of PE “Lisnyi” of the District of Pustomyty of the Region of Lviv in Beijing broiler ducks of cross STAR 53 (heavy),

selection of French breeding company Grimaud Freres Selection was carried out. Husbandry of poultry was the floor with free access to feed and water, according to current technological requirements. All poultry received complete feed, balanced in nutrients and bioactive substances, according to the direction of productivity and growing period. Two groups of poultry were formed: control and experimental, with 15 birds in each. Ducks of the experimental group, starting from 6-day age, receive 1 % of biomass of carotene-synthesizing yeasts *P. rhodozyma*, strain KNH1 during 14 days. Composition of intestinal microflora at the age of 37 and 58 days was studied in young and adult ducks. At the end of the specified age periods, 5–6 birds were slaughtered. Content of the blind and small intestine of poultry was the study material. Samples of intestinal content were selected after slaughter and transferred into the sterile test tubes. Quantitative and qualitative composition of microflora using dilution method and inoculation of microorganisms on elective media (Endo, Sabouraud, bismuth-sulphite, Baird-Parker, Blaurock, blood agar) was studied in the samples of the intestinal flora.

Their identification was carried out by morphological, cultural, physiological, and biochemical properties (Olkenytskyi and Simons media).

Statistical processing of the results was performed by Microsoft Excel, using the Student test.

Thus, after two weeks of use of biomass of carotene-synthesizing yeasts *Phaffia rhodozyma* (1 % of the feed mass) in the diet of ducks at the age of 6 days, content of ducks at the age of 37 days in the experimental group showed positive changes in the composition of microflora. For example, slight decrease in the total count of cells of *E. coli* without redistribution of strain ratio with different enzymatic capability and lack of lactose-negative strains was established. Total count of bifidobacteria and lactobacilli was 99 % from the total count of microorganisms ( $10^{10}$  CFU/g). Three weeks after the experiment termination, content of the blind intestine of the ducks at the age of 58 days in the experimental group showed 10-fold reduction of the total count of cells of *E. coli* due to low-fermenting strains of *E. coli*, which changed the ratio between strains with different fermentative capability  $lac^+$  to  $lac^\pm$  from 99.9 : 0.1 (37-day ducks) to 93 : 7 (58-day ducks). Reduction of the total count of non-pathogenic strains of staphylococci at the background of high count of bifidobacteria and lactobacilli was established.

Therefore, the use of biomass of carotene-synthesizing yeasts *Phaffia rhodozyma* in the diets of ducks in critical periods of their growth and development allows to prevent impairment of composition of intestinal microflora and occurrence of dysbiosis.