

ZooBioR EFFECTS ON MUSCLE PROTEIN METABOLISM AND BODY WEIGHT DYNAMICS

Liliana ROTARI¹, Vasile MACARI^{1*}, Valeriana PANTEA², Ana MACARI¹,
Gheorghe PISTOL¹, Oleg RETȘ¹, Oleg CHISELIȚA³

¹Department of Food Safety and Public Health, Technical University of Moldova, Chisinau, Republic of Moldova

²Biochemistry Scientific Laboratory, Nicolae Testemițanu State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

³Institute of Microbiology and Biotechnology, Technical University of Moldova, Chisinau, Republic of Moldova

*Corresponding author: vasile.macari@sasp.utm.md

<https://doi.org/10.52757/bsd26.59>

Background: Rapid global population growth is placing increasing pressure on animal food production systems. In the Republic of Moldova, poultry farming represents a key agricultural sector; however, birds raised under intensive conditions are frequently exposed to technological stress, which can negatively affect health, metabolic balance, and productivity. In this context, natural biologically active compounds are increasingly investigated as sustainable alternatives to support physiological functions and improve performance.

Aim of the study: Assessment of the effects of ZooBioR, a natural product derived from the cyanobacterium *Arthrospira platensis*, on muscle protein metabolism and body weight dynamics in quails.

Materials and methods: The experiment was conducted under poultry farm conditions on 200 adult laying quails (Texas universal breed), randomly assigned to control (n = 100) and experimental (n = 100) groups. The experimental group received a basal diet supplemented with ZooBioR (15 mg/kg feed), while the control group received only the standard diet. Blood, muscle, and liver samples were collected from 5 birds per group at days 0, 35, and 71. Biochemical parameters (total proteins, albumin, AST, ALT, CK-NAK, and G-6-PDH) were measured spectrophotometrically, with $p < 0.05$ considered statistically significant.

Results: No adverse effects were observed during the experimental period. Total muscle protein content increased initially in both groups (control: +8.1%, $p < 0.05$; experimental: +13.6%, $p < 0.001$), then declined toward the end of the trial, reflecting physiological adaptation to growth and production stages. Albumin levels decreased slightly over time in both groups. AST and ALT activities decreased throughout the experiment, with more pronounced reductions in the experimental group at the final stage (AST: -27.7%; ALT: -28.6%), indicating improved liver function. CK-NAK activity decreased initially in both groups, followed by a moderate increase in the experimental group (+17.5%) at the end of the trial. G-6-PDH activity remained consistently higher in the experimental group ($p < 0.05$), suggesting enhanced cellular antioxidant defense and increased resistance to oxidative stress.

Conclusions: The study demonstrates that ZooBioR supplementation improves metabolic efficiency, optimizes protein turnover, and enhances oxidative balance and adaptation to intensive rearing conditions.

Keywords: *Arthrospira platensis*, quail, ZooBioR, protein metabolism, muscle tissue, body weight.

Acknowledgments: This work was supported by research subprogram 020101 funded by the Ministry of Education and Research of the Republic of Moldova.