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Prospects of Using the Polyamines in Poultry Farming

Abstract: Nowadays, due to achievements of the modern biology, the age range of many animal species has significantly extended, their resistance to stress and adaptive capacity have increased. The polyamines belong to the compounds that can influence the duration and quality of the life of living organisms. Polyamines are lowmolecular-weight nitrogen-containing compounds found in all the living organisms. The main representatives of polyamines in the organism of birds are putrescine, spermidine and spermine synthesised from the amino acid ornithine under the action of the enzyme ornithine decarboxylase (ODC). Polyamines play an important role in cell growth and development, as well as in the regulation of gene expression and protein biosynthesis. Modulation of the level of polyamines in cells of embryonic tissue leads to acceleration of cell division and increase of the embryo growth rate. Nowadays, it has been acknowledged that any stress causes the polyamine metabolism disorder, and, as a consequence, leads to the development of a nonspecific stress reaction. The research resulted in development of a methodology of preventing the stress-induced embryonic development disorders in poultry in an industrial incubator. This will reduce the negative impact of stress on the formation of the poultry embryo, thus increase breeding the high-quality young birds at the industrial and small-scale poultry farms. The research is carried out in the frame of the Russian Science Foundation grant No. 24-26-00225 dated December 29, 2023 “Method of Preventing the Stress-Induced Disorders during Poultry Incubation under Microclimatic Stresses.”