MORPHOGENESIS OF LUNGS IN ROSS-308 BROILER CHICKENS (LITERATURE REVIEW)

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Introduction. Broiler chickens are characterized by high productivity and rapid growth, which significantly enhance the economic importance of this breed. The morphogenesis of the respiratory system is a critical factor for their healthy growth and overall physiological development. Studying the morphogenesis of the respiratory organs provides important insights into the functional activity of the respiratory system, its structural development, and the adaptability between the different components of the system.

In Ross-308 broiler chickens, alterations in the structure of the respiratory organs, their functional capacities, and the compatibility of each organ system are crucial. It is important to emphasize that proper development of the respiratory system plays a key role in ensuring healthy growth and high productivity. The respiratory system is essential for providing oxygen, which is necessary for metabolic processes, and for expelling carbon dioxide. The morphogenetic characteristics of respiratory development, the relationship with body weight, as well as the high physiological demands and internal balance specific to broiler chickens, are vital for understanding their physiological adaptability [6].

In 1-day-old broiler chicks, the lungs have completed the embryonic phase of development, and the respiratory pathways begin to form. Researchers such as Lexi (2011) and Vereshchagin (1978) noted that the lungs and bronchi are not fully developed during the embryonic stage. Therefore, in 1-day-old chicks, the lungs are not yet functional, as the pneumocytes and the gas exchange mechanisms are not fully developed [1,3].

At 7 days of age, the respiratory organs undergo considerable development. Pneumocytes and bronchi become fully formed, the airways extend, and the efficiency of the respiratory process improves. Sobolev (1987) emphasized that for stable respiratory function at this age, the airways must continue to develop adequately [4].

By the 14th day, respiratory organ development progresses to a new stage. Pneumocytes are fully formed, and gas exchange becomes more efficient. Tkachenkov (2005) noted that at this stage, the respiratory system operates at higher efficiency. Pneumocytes enhance the absorption and distribution of air within the respiratory pathways. By 14 days of age, the airways and lung tissue are fully developed, with

pneumocytes becoming the main functional cells of the respiratory system. Furthermore, gas exchange efficiency improves, and elastic layers form in the airways [5].

At 21 days, the respiratory organs are fully formed and begin to function actively. The bronchi and microbronchi adapt to their function, and pneumocytes absorb more oxygen while expelling carbon dioxide. Bolas (2012) and Sobolev (1987) examined the full development of the respiratory system at this stage. At this age, the respiratory system is mature and optimally absorbs oxygen. Pneumocytes and bronchioles continue to develop as part of the final maturation of the respiratory system, ensuring stable gas exchange, which enhances cellular oxygen supply [3,7].

At 35 days of age, the respiratory organs reach their highest level of development. The airways and pneumocytes are fully developed, and their elasticity contributes to the overall efficiency of the respiratory system. Lebedev (1990) and Vereshchagin (1978) emphasized that at this age, the respiratory organs are fully formed and operate at maximum efficiency. In 35-day-old chicks, the respiratory system is functioning at its peak, with maximal stability and performance of the respiratory organs [1,2].

Each organ in the respiratory system performs specific functions during respiration, and these organs are composed of various muscles, tissues, and cells. To maintain optimal respiratory efficiency, each organ must develop at the correct time and in the correct manner.

Conclusion The morphogenesis of the respiratory organs in broiler chickens, according to their developmental stages, contributes to the strengthening of respiratory system function. The development of respiratory organs during the embryonic, postnatal, and juvenile stages is essential for ensuring the efficiency of the respiratory system. These studies provide valuable information on respiratory organ development and are crucial for ensuring the health of broiler chickens. They will aid in developing new recommendations for the care and management of broiler chickens in the future.

Research findings. Based on the findings of this study and the analysis of literature, the morphogenesis of the lungs in Ross-308 broiler chickens at 1, 7, 14, 21, and 35 days of age demonstrates a specific developmental phase at each age. On day 1, the respiratory organs are in their embryonic form; by day 7, they begin to develop, and by day 14, respiratory efficiency increases. By day 21, the organs are fully formed, and by day 35, the respiratory organs function at their maximum capacity.

Recommendations . For effective broiler management and to ensure healthy growth, it is important to consider the developmental stages of the respiratory organs. Additionally, improving environmental and nutritional conditions will help enhance the efficiency of the respiratory system.

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