

QUALITY OF FERTILIZED EGGS EXPOSED TO SIMULATED MECHANICAL VIBRATIONS CONDITION

QUALIDADE DE OVOS FERTILIZADOS EXPOSTOS A CONDIÇÕES SIMULADAS DE VIBRAÇÕES MECÂNICAS

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The fertile egg transport is a crucial issue in the Brazilian broiler aviculture chain. Therefore, many agents intrinsically connected to this process such as the mechanical vibrations, can jeopardize the integrity of this fragile load. Given to this threatening problem the aim of this research was to assess the quality of fertile eggs exposed to different simulated conditions of mechanical vibrations. A mechanical agitator was developed to reproduce the treatments of this study, which were formed by 2 vibration levels. An inferior (instantaneous acceleration, up to 5 m s⁻²) and a superior (instantaneous acceleration above 10 m/s²), in which they were applied in 2 exposition times, a minimum (60 minutes) and a maximum (180 minutes), making the treatments T1, T2, T3, T4. The assay was conducted in a random modeling in 4 complete blocks that represented the factorial repetitions 2 x 2 + 1, with an additional treatment (control). In the total, 2016 eggs from the same batch of matrixes (Cobb-500) in the peak egg reproduction (32-35 weeks) were used. From these eggs, 1920 were exposed to the 4 factorial treatment vibrations (480 eggs per treatment), meanwhile, the remaining 96 were used as control treatment. Among the vibrated eggs, 96 per treatment were sampled in order to be analyzed. In addition, some factors were verified: the diameter and the egg yolk height (EYD and EYH), the diameter and the height of the albumen (AD and AH; mm), the egg yolk and albumen index (EYI and AI), the Haugh unity (HU), the weight loss of the trays during simulations (WL; g), and the egg weight (EW; g). The meaning of the treatment effects was verified using a F-test in the analysis of variance (P<0.05). The average of the factorial treatments was compared to the control using the T-test; meanwhile, the Tukey test was used in the multiple relative in comparison to the factorial part of the treatment, in which both of them were submitted to the level of significance of 5%. It was verified that the eggs exposed to vibrations presented the worst parameters of quality with a meaningful reduction in the Haugh unity of 7.85% related to the control treatment. Besides that, they showed meaningful alterations in AD, AH, AI answers, indicating and proving a huge liquefaction of albumen as it was found in HU answer. Independently, the superior vibration level and the longest exposition time caused the worst results in AH, AD, AI, and HU, proving that the intensity as well as the vibration time influence in the quality of fertile eggs. The weight loss of the trays (WL) was increased drastically due to the longest exposition time. However, in practical terms, this loss was small. The answers found in the egg yolk (EYD, EYH, EYI) and the egg weight (EW) were not influenced by the assessed treatments. Hence, it is possible to conclude that mechanical vibrations can jeopardize the quality of fertile eggs.

Keywords: accelerometer, albumen, fertile egg transport, Haugh unity.