ZOOTECNIA BRASIL
Centro de Convenções da PUC-GO | Goiânia-GO
27 a 30 de agosto de 2018

55ª REUNIÃO ANUAL DA SOCIEDADE BRASILEIRA DE ZOOTECNIA

ZOOTEC 28º CONGRESSO BRASILEIRO DE ZOOTECNIA

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

SERUM BIOCHEMISTRY, EGG SHELL FORMATION AND MEDULLARY BONE DURING DAILY EGG-CYCLE IN JAPANESE QUAIL

Tatiana C SANTOS*[1], Kassiana G ANDRADE[1], Flavia K CRUZ[1], Isabelle N KANEKO[1], Christian D N FIGUEROA[1], Mariana C NASCIMENTO[1]

*corresponding author: tcsantos@uem.br
[1]Universidade Estadual de Maringá, Maringá, Paraná, Brasil

In this study, we describe the changes during daily egg-cycle formation in Japanese quail. Sixty quails (18 wks) were distributed in 6 treatments according to the egg-cycle formation: 0, 2, 4, 8, 14 and 20hs post oviposition. We analyze the serum biochemistry and morphological aspects of eggshell formation by scanning electron microscopy and bones (femur and tibiotarsus) strength variables. The serum biochemistry results showed that phosphorus, alkaline phosphatase and ionic calcium did not vary with the periods, while albumin and total calcium had a higher value at 2hs post oviposition and were lower at 8 and 14hs, respectively. Eggshell analyzed by scanning electron microscopy showed that the beginning of mammillary bodies formation occurred 4hs post oviposition. At 8hs post oviposition occurred the final formation of mammillary layer and the beginning of palisade layer with columns and gas exchange pores randomly. The calcium carbonate crystals grew with a ridge display, observed as consecutive layers. At 14hs post oviposition the palisade layer is evident and in the outer view shows the surface irregular spongy appearance and it is possible to observe projections of the columns that make up this layer. At 20hs post oviposition, gas exchange pores and all layers can be identified, from inner to outer layer: mammillary, palisade and cuticle. The last one gave a smoother surface appearance. For bone analysis, the bone strength variables and weight of the bones remained unchanged during the daily egg-laying cycle. The bone mineral density (mmAl) of the femur and tibiotarsus presented lower mean at 2hs and higher at 14hs post oviposition. There were no differences in cortical variables in both bones. However, in the medullary bone there were differences for Ca%, with lower means at 14hs after post oviposition, coinciding with the active phase in uterus (palisade layer formation), which in the quails corresponds to the nocturnal period and early morning (06h00). The higher means of Ca% was at 0h post oviposition (16h00). This finding may indicate a recovery of reserve of minerals in medullary bone in the period of inactivity of the uterus, preparing medullary bone to the next egg-cycle. The concentration of serum calcium and the calcium content of the medullary bone of the femur and tibiotarsus of Japanese quail had changes in consequence of the daily egg-cycle, maintaining the calcium requirement and homeostasis during daily egg-cycle to support the eggshell formation in uterus.

Keywords: calcium, femur, tibiotarsus, eggshell, palisade layer

Acknowledgments: CNPq, Fundação Araucária