Effect of yolk ratio in hen's eggs on the hatching weight and on the heart and liver ratio in chicks at hatching

Gábor MILISITS¹, András SZABÓ¹, Tamás DONKÓ¹, Zoltán SÜTÖ¹, Attila ORBÁN², Eszter SZENTIRMAI¹, Olga PÓCZE¹, Jolán UJVÁRI¹, Imre REPA¹

¹Kaposvár University, Faculty of Animal Science, Guba Sándor u. 40, Kaposvár, Hungary, (e-mail: milisits.gabor@ke.hu)
²Bábolna Tetra Ltd., Petőfi Sándor u. 18, Uraiújfalu, Hungary

Abstract
The aim of this study was to examine, whether the yolk ratio of hen’s eggs has an effect on the hatching weight and on the heart and liver ratio to the liveweight in chicks at hatching. Altogether 3,500 hen’s eggs - originated from the same company and from a 24 weeks old TETRA-H parent stock - were involved in the examination. The yolk ratio in the eggs was determined in vivo by means of computer tomography using a SIEMENS Somatom Emotion 6 multislice CT scanner at the Institute of Diagnostic Imaging and Radiation Oncology of the Kaposvár University. Based on the measured values eggs were separated into three groups: eggs with extreme high, eggs with average and eggs with extreme low yolk content (10-10% in each group). All of these eggs (n=350 per group) were incubated thereafter. After hatching 30 chicks per group were randomly chosen and their liveweight and the weight of their heart and liver were measured thereafter. Based on the measured values it was established that the hatching weight of the chicks decreased with increasing the yolk ratio in the eggs (36.0±2.1, 35.8±2.9 and 34.8±2.0 in the case of chicks hatched from eggs with low, average and high yolk content, respectively). In spite of this the ratio of the heart and liver to the liveweight was increasing with increasing the yolk ratio in the eggs (heart (%): 0.92±0.13, 0.95±0.18 and 0.96±0.19; liver (%): 2.69±0.36, 2.70±0.33 and 2.75±0.34 in the case of chicks hatched from eggs with low, average and high yolk content, respectively). Based on the results it was concluded that - according to some former results - the higher albumen content in the eggs resulted in higher hatching weight and the higher yolk content in the eggs in better body composition in the chicks.

Key words: egg yolk content, computer tomography, chicken, hatching weight, body composition

This research project was supported by the Norwegian Financial Mechanism (Norway Grant) and the Hungarian Scientific Research Fund (OTKA NNF 78840).