

Ss. CYRIL AND METHODIUS UNIVERSITY IN SKOPJE  
FACULTY OF VETERINARY MEDICINE - SKOPJE



Joint meeting  
5<sup>th</sup> International Vet-Istanbul Group Congress  
&  
8<sup>th</sup> International Scientific Meeting  
Days of veterinary medicine - 2018

# BOOK OF ABSTRACTS

23-27 September 2018  
Ohrid, R. of Macedonia

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**&**

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OF THE JOINT MEETING  
5<sup>th</sup> INTERNATIONAL VET-ISTANBUL GROUP CONGRESS AND  
8<sup>th</sup> INTERNATIONAL SCIENTIFIC MEETING  
DAYS OF VETERINARY MEDICINE - 2018**

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**INFLUENCE OF INCREASED INCUBATION TEMPERATURE  
ON BREAST MUSCLE DEVELOPMENT OF BROILERS  
AFTER HATCHING**

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One of the goals of modern poultry production is improving the quality and quantity of broiler meat. Recent research is directed to find the relation between incubation factors and muscle development, which can affect on meat characteristics. The aim of this study was to examine the influence of increased incubation temperature on development of breast muscles of broilers in days after hatching. Eight hundred broiler eggs (*Ross 308*) were divided in four equal groups (200 *per* each group) and placed in four incubators. Group A represents control group with incubation temperature 37.8°C. In groups B, C, D during the 16<sup>th</sup>, 17<sup>th</sup> and 18<sup>th</sup> day of incubation temperature was increased to 38.5°C, 39.5°C and 41°C respectively, for 3 hours each day. On the 7<sup>th</sup>, as well as on the 14<sup>th</sup> day after hatching, 10 chickens from each group were sacrificed. Samples of breast muscle (*M. pectoralis superficialis*) were taken for histological examination of diameter of muscle cells, volume density of connective tissue in the muscle and nucleo-cytoplasmic ratio of muscle cells. Measurements showed that diameter of breast muscle cells on 7<sup>th</sup> day after hatching in treated groups was decreased in average by 6.36µm compared to control group, while on 14<sup>th</sup> day after hatching in group in which incubation temperature was increased to 41°C, it was decreased in average by 5.84µm compared to other groups. In all groups, on 14<sup>th</sup> day after hatching, diameter of breast muscle cells was increased in average by 6.71µm, while nucleo-cytoplasmic ratio of breast muscle cells was decreased in average by 0.035, compared to 7<sup>th</sup> day after hatching. Lower diameter of breast muscle cells in treated groups on 7<sup>th</sup> day after hatching can be explained by higher proliferation of myoblasts due to applied treatments. During the proliferation, growth of cells is reduced, which is reflected on lower diameter of muscle cells on 7<sup>th</sup> day after hatching. It can be assumed that increased temperature during incubation affect on increased growth of muscle cells in postnatal period of development, which is in agreement with approximately equal diameters on 14<sup>th</sup> day after hatching between control group and groups in which incubation temperature was increased to 38.5°C and 39.5°C. It seems that increased temperature on 41°C had negative effect on growth and development of muscle cells, which results in decreased diameter of breast muscle cells on 14<sup>th</sup> day after hatching in group which incubation temperature was increased to 41°C.

**Key words:** broiler, incubation temperature, breast muscle cells

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