

Abstract of doctoral dissertation

**“QUALITY OF DUCK MEAT WITH DIFFERENT GROWTH RATES UNDER
SUSTAINABLE REARING CONDITIONS”**

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Contemporary consumers from developed and rich countries expect high-quality products, who adhere to the principles of rational nutrition and are not indifferent to the conditions of keeping animals. The aim of the study was to assess the basic physical and chemical characteristics of the meat of peking ducks of three breeds / families / lines, differing in growth rate and maintained in accordance with the conditions of balanced rearing and using comparatively two additives of phytogetic origin and two rearing periods. In addition, the study specifies the development of indicators for the usability and slaughter performance of ducks, depending on the genetic origin, nutrition and age of slaughtered birds.

Experimental flocks of polish pekin ducks P-33, Dworka D-11 and Star 53 H.Y. kept for a period of 7 and 8 weeks in a semi-intensive system with access to the paddock, in accordance with the conditions of sustainable rearing. Within each genetic group, three nutritional subgroups were created in which, starting from the fourth week of bird life, 5% herb mixture (Z) or 5% black cumin seeds (*Nigella sativa* L., Cz) were added to the feed. In contrast, control group (K) received only compound feed.

The influence of the examined factors (genotype, sex, nutrition and rearing period) and the interaction between them on selected analyzed meat quality features were demonstrated. No unequivocal impact of the feed additives used in duck nutrition on the development of quality characteristics of their meat has been demonstrated. It was found that the meat of 7 and 8 week old Star 53 H.Y. hybrids it has a good rate of glycolytic transformation after slaughter, expressed by the correct acidification (pH₂₄) of the pectoral muscles (≤ 5.60) and leg muscles (≤ 5.85). On the other hand, the meat of duck Dworka D-11 8 weeks old ducks and polish peking P-33 was characterized by more favorable acidification in relation to birds kept for 7 weeks. Star 53 H.Y. they contained ($p \leq 0.05$) less fat and collagen and leg muscles ($p \leq 0.05$) less fat and more protein. However, the breast muscles of duck Dworka D-11 ducks contained less

protein and more fat, especially after 8 weeks of rearing. The meat of 8 week old ducks contained significantly ($p \leq 0.05$) less water. There was a tendency to increase the amount of fat and protein and decrease the amount of collagen in the leg muscles of ducks reared a week longer (7 vs 8 weeks). Raw pectoral muscles were harder (higher F1 value) in the group of 7 week old ducks than a week older. Meat after heat treatment, coming from 8 weeks old ducks, was harder (higher value of F1 and F2) than birds one week younger. Tendencies to increase the tenderness of duck meat fed with feed supplemented with a mixture of herbs or black cumin seeds were observed. Star 53 H.Y. duck meat it was the hardest and Dworka D-11 most fragile.

Ducks with different growth rates Star 53 H.Y., Dworka D-11 and polish pekin P-33 are good material for obtaining high quality meat in conditions of balanced rearing. For economic reasons, 7 week bird rearing is recommended. The use of a mixture of herbs and seeds of black cumin in 5% did not significantly affect the shaping of performance and quality of duck meat.

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