

ГОДІВЛЯ СІЛЬСЬКОГОСПОДАРСЬКИХ ТВАРИН ТА ТЕХНОЛОГІЯ ВИРОБНИЦТВА КОРМІВ І КОРМОВИХ ДОБАВОК

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CHELATES IN YOUNG PIGS MIXED FEED AND THEIR INFLUENCE ON PRODUCTIVITY

V. Bomko

Doctor of Sciences, Professor Department of feed technology, feed additives and animal feeding

O. Kuzmenko

*Associate Professor, PhD, Department of feed technology, feed additives and animal feeding,
Bila Tserkva National Agrarian University, Bila Tserkva, Ukraine, godivlya@ukr.net*

A. Horchanok

*Associate Professor, PhD, Department of Aquatic Bioresources and Aquaculture,
Dnipro State Agrarian and Economic University, Dnipro, Ukraine*

Abstract. *Feeding zinc in the form of an organic chelate in the mixed feed for young Large White pigs in the process of fattening causes the improvement of metabolic processes in the organism which positively affects the indices of pigs laughter. The intervention of zinc chelate in mixed feed promotes an increase in the morphological composition of the carcass.*

It was established that in the process of fattening young Large White pigs with zinc chelate dose of 83.2 g/t in mixed feed a slaughter yield is higher by 1.2% compared with analogues of control. Pigs exceeded analogues by 6.6%.

Key words: *pigs, zinc chelate, mixed feed, slaughter weight, slaughter yield, morphological composition of carcasses.*

Introduction. Ukraine has sufficient genetic potential of pig breeds which can be effectively used in the hybridization system to produce young animals for fattening. Previous studies have found that among the substances that play an important role in vital activity of the animal organism; recently great attention has been paid to microelements, i.e. chemical elements contained in the body in very low concentrations. Most microelements are indispensable for the organism. The lack or excess of them can cause significant pathological changes in the animal organism (Horchanok A.V. et al., 2019).

Zinc is also an essential microelement. Zinc is required for the functioning of more than one hundred enzymes, such as carboxypeptidase, oxidoreductase, transferase, alcohol dehydrogenase, which are related to protein and carbohydrate metabolism, energy metabolism, nucleic acid synthesis, haem biosynthesis, CO₂ transport, and others (Horchanok A.V. et al., 2018).

Studies have shown that the biological role of Zinc is related to the activity of the endocrine glands where it mainly concentrates. At present it is proved zinc is necessary for endocrine function, its involvement in the mechanism of cell fission has been proved (Huntington et al., 2002; Merzlov et al., 2009; Horchanok A.V. et al., 2019).

Presently carbonate, chloride, and sulphate of Zinc, which have good water solubility, are an effective source of enrichment for diets. Therefore, these elements are rapidly excreted and have little absorption (Sethy et al., 2012; Bomko M et al., 2015; Khavturina A.V., 2015).

The Purpose of the research was to set the optimum dose of Zinc chelate in mixed feed for young Large White pigs in the process of fattening which can provide maximum meat productivity.

Material and methodology of research. The scientific and commercial experiment was carried out in order to establish the optimal dose of Zinc chelate in mixed feed for young Large White pigs in the process of fattening which would provide the maximum meat productivity. To evaluate the effectiveness of Zinc chelate it was necessary to study its effect on the productivity of young pigs during fattening with

the establishment of optimal dose, since native feeding base uses premixes of different composition in the animal diets.

Results. In the course of the experiment the consumption of mixed feed by Large White pigs was controlled which provided pigs optimal growth and development.

Thus, Large White pigs ate from 269 to 273 kg of mixed feed for the whole period of experiment. The pigs from the 5th experimental group consumed the biggest amount of feed, by 1.5% more than in control group. An increase in feed consumption was also observed in the 2nd, 3rd and 4th experimental groups, which exceeded the control group by 0.7%, 0.7%, and 1.1%, respectively.

During the main experimental period Large White pigs consumed from 223 to 227 kg of feed, which is 265, 4-270,1 feed unit.

Thus, the intervention of different levels of Zinc chelates into the mixed feed did not cause significant changes in feed consumption of experimental pigs.

Feeding of different levels of Zinc chelate to experimental pigs during the process of fattening affected feed costs per 1 kg of growth.

Consumption of digestible protein per 1 kg of growth was the lowest in the 5th experimental group and amounted 328 g, which is less by 2.4% compared to the control group.

To study the effect of different levels of Zinc chelate on the quality of meat and lard and its chemical composition, a slaughtering of animals was performed.

Morphological composition analysis of the carcasses showed that the meat yield in the experimental groups was high (Image 1).

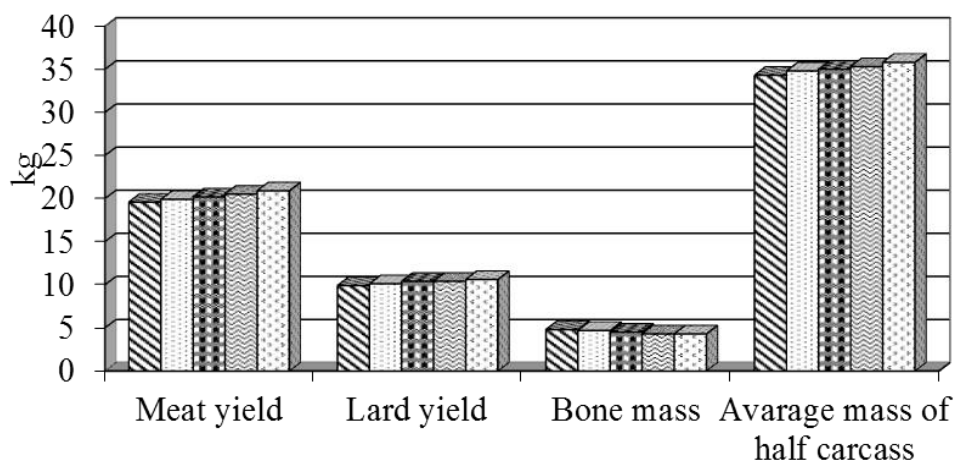


Image 1. Morphological composition of carcasses of Large White pigs, kg

It should be noted that the pre-slaughter live weight of pigs from the experimental groups exceeded analogues from the control group. In the half-carcasses of pigs from the experimental groups the meat yield was more by 1.5%, 3.1, 4.6 ($p \leq 0.05$), and 6.6% ($p \leq 0.01$), respectively. The part of lard in the half-carcasses of animals from the 2nd experimental group exceeded the control by 2.0%, 3rd and 4th by 5.1% ($p \leq 0.05$), and 5th group by 7.1% ($p \leq 0.05$).

The smallest amount of bones was in the carcasses of pigs from the 4th and 5th experimental groups, this indicator was less by 10.4% ($p \leq 0.05$) compared with the control; in the 2nd and 3rd groups by 2.1% and 6.2%, respectively. Thus, the enrichment of mixed feed for young Large White pigs of the experimental groups with zinc chelate contributes the increase of slaughter indices and improve the morphological composition of the carcasses. The highest rates were found in the 5th experimental group of animals.

The results of the experiment in establishing optimal doses of zinc chelate indicate that this feed nutritional supplement provides the animal productivity and has a certain effect on the mass of internal

organs. However, there were no deviations from the norm in the experimental groups of pigs generally and compared to the control.

Taking into account that the liver performs metabolic, antibacterial, antitoxic, regenerative and other functions, changes in the mass of this organ in the control and experimental groups of pigs ranged at 2.0%. There is insignificant difference between the animals from the control and experimental groups.

Analysis of heart, lungs, kidneys and spleen mass indicates that there are no significant differences between the control and experimental groups. Mass of internal organs in the experimental groups of pigs was at the level of control, and the differences existing between animals of different groups during biometric processing were statistically insignificant ($p \geq 0.05$).

Regarding the mass of digestive organs, it should be noted that pigs consumed different levels of Zinc chelate had a larger mass of stomach, small and large intestine. The highest index of the mass compared with the control was in the 5th experimental group of pigs which consumed mixed feed containing Zinc chelate in the amount of 83.2 g/t. Thus, animals from the 2nd-4th experimental groups by mass of the stomach exceeded the control by 4.0-10.7%. In the 5th group of pigs this indicator was higher by 13.3% compared with the control.

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ХЕЛАТИ У КОМБІКОРМІ МОЛОДНЯКУ СВИНЕЙ ТА ЇХ ВПЛИВ НА ПРОДУКТИВНІСТЬ

В. С. Бомко, О. А. Кузьменко, А. В. Горчанок

Анотація: Згодовування у комбікормах молодняку свиней породи велика біла на відгодівлі Цинку у вигляді органічної форми хелату зумовлює покращення обмінних процесів в організмі, що позитивно впливає на показники забою свиней. Введення хелату Цинку в складі комбікормів сприяє підвищенню морфологічного складу туші та хімічного складу м'яса і сала.

Встановлено, що у молодняку свиней на відгодівлі породи велика біла за дози хелату Цинку 83,2 г/т комбікорму показник забійного виходу на 1,2 % перевищував аналогів контролю. За виходом м'яса свині переважали аналогів на 6,6 %.

Ключові слова: свині, хелат Цинку, комбікорм, забійна маса, забійний вихід, морфологічний склад туші.