https://doi.org/10.15407/animbiol24.04.027
UDC 636.2:658.512
Received 18.09.2022 ▪ Revision 07.11.2022 ▪ Accepted 20.12.2022 ▪ Published online 30.12.2022

Efficacy of “EnzActive mix” feed additive in piglet growing

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The study was conducted in two stages. The first stage of study was carried out on lactating sows with suckling piglets, and then on weaned piglets up to 43 days of age. The second stage was carried out on young pigs from 43 to 165 days of life during fattening stage. For the study, two groups of sows of the 2–3 farrow were formed. The sows of the control group (C) were fed standard feed, and the experimental group (E) received standard feed with the addition of the “EnzActive Mix” feed additive in the amount 0.3 kg/t of feed. The suckling piglets received pre-starter feed from 5 days of age until weaning. The E group received the experimental feed additive in the amount of 500 g/t. Weaned piglets in the growing period continued to consume pre-starter feed. After the 43 day of life, the piglets in E group received the “EnzActive Mix” feed additive in the amount of 0.3 kg/t to the standard feed. It was found that during the experiment, which lasted 33 days, the live weight of sows decreased by 25 kg (C) and by 20 kg (E), which is 2.44% less (P<0.001). In the early age piglets in E group, there was a statistically significant increase in live weight on day 28 (P<0.001) or by 15.28% compared to C group. After fourteen days of growing, the piglets of E group had a significant increase in live weight (P<0.001) or 12.61%, compared to C group. The increase in live weight in E group is confirmed by the piglets average daily gain rise on 7.14% (P<0.001). The second (fattening) stage of the experiment showed that after adding the “EnzActive Mix” feed additive, from 43 to 80 days of life the average weight in the E group was 15.38% (P<0.001) higher than in C group, and also the increase in live weight by 14.55% (P<0.001) was admitted. We found out an increase in average daily weight gain by 17.27% (P<0.001) in the E group, pointing that the cost of feed to obtain 1 kg of weight gain was lower by 14.61% comparing to the C group. In the second fattening period from 81 to 118 days of life, the live weight in E group increased by 15.4% (P<0.001), live weight gain and average daily weight gain increased by 17.94% (P<0.001), compared to C group, whereas the feed costs per 1 kg of weight gain decreased by 15.38% (P>0.001). In the third period of fattening, which lasted from 119 to 165 days of life, the feed consumption per 1 kg of weight gain in E group was significantly lower by 9.06 (P>0.001), and an increase in live weight and average daily weight gain by 9.86% (P<0.001) was noted.

Key words: piglets, “EnzActive Mix”, compound feed, productivity, enzymes, probiotics

One of the most pressing problems in pig production, especially with intensive technologies, is the need to significantly increase the productive effect of compound feed, on the one hand, and to increase the resistance and safety of animals, on the other. This is especially relevant in the context of a shortage of high-quality grain fodder, high-protein resources, including animal resources [2]. At the same time, the grain group used for feeding, obtained from different regions of Ukraine, differs in protein, fat content, and the contents of minerals. This accordingly affects the physiological and biochemical processes in the body of animals, which can lead to a decrease in their productivity.

Furthermore, gastrointestinal and respiratory diseases, especially in young animals, cause significant economic losses in the pig industry. Therefore, intensive technologies involve not only balanced feeding, housing conditions, but also new conceptual approaches to animal diseases prevention and treatment. In this regard, in recent years, a large number of probiotics appeared, which are used to normalize the intestinal microflora and to increase animal resistance [1, 4].

As a probiotics, a combination (or monoculture) of non-pathogenic, atypical spore-forming microorganisms can be used, such as non-lactic acid-producing yeast, which pharmacological effect is associated with a competing, antagonistic effect on aggressive intestinal microflora. Yeast has been used for decades as a preventive and therapeutic agent for diarrhea and other gastrointestinal disorders in humans. In monogastric animals, the mechanism of yeast action is explained by the fact that its addition to the diet stimulates the formation of disaccharides on cell membranes, with a non-adhesive effect against pathogens, activation of nonspecific immunity, weakening of toxins, and an anthoganistic effect against pathogens.

Additionaly, enzymes are increasingly used in modern feed for young animals, especially in recipes with a high content of fiber and non-structural carbohydrates, which is a result of the cheaper cereals (barley, rye, oats), and grain and oilseed processing by-products (bran, grain waste, sunflower and rapeseed meals) use in feed. Enzyme preparations act as stimulants for the active breakdown of nutrients in the animal body and their assimilation. An important feature of enzyme preparations is that they cannot be accumulated in the body of animals in comparison with hormones [3].

In order to obtain better results in pig breeding, in recent years, various means and feed additives in the form of acidifiers, probiotics, enzymes and essential oils have been used quite intensively to improve productivity [16]. Furthermore, their use in animal feeding requires sufficient knowledge and experience. Incorrect use can lead to feed efficiency reduction, decrease of animal productivity, causing significant economic losses. To make a decision which probiotic and enzyme preparation are appropriate to use in a particular case, it is necessary to know the characteristics of these preparation, their metabolic and productive effects.

At this point of view, the development and implementation of new complex probiotic enzyme preparation that will have a positive impact on the animal growth and safety is an urgent task in intensive technologies of pig production. That's why, it is worth to pay attention to a new unique product containing both a probiotic component — live yeast of the genus *Saccharomyces cerevisae* with an activity of $\geq 1.5\times10^{10}$ CFU/g, and an enzymatic component — protease, cellulase, xylanase, α-amylase, β-glucanase, phytase.

Therefore, the purpose of the research is to study the efficacy of the "EnzActive Mix" feed additive at a closed-cycle pig farm on lactating sows, early-age piglets, weaned and fattening piglets.

Materials and Methods

The research was conducted at a pig farm in the Kyiv region. For the study, sows of 2–3 farrow of the Big White breed of the RIS genetic company were selected. This experiment was conducted in two stages:

- the stage I — the effect of "EnzActive Mix" feed additive on productivity of lactating sows and their piglets from 5 to 43 days of life;
- the stage II — the effect of the "EnzActive Mix" feed additive on growth and development of fattening piglets.

The feed for all technological groups was prepared on the basis of the pig complex using feed recipes and premixes offered by the Danish feed company *Nutrimin*.

The main methodological technique for setting up the experiment was the method of analogue groups [6].

At the first stage of the study, two groups of sows were formed, 6 animals each in the control (C) and the experimental (E) group, which were placed in the one farrowing box 5 days before farrowing. All animals received a standard diet balanced in terms of nutrients and biologically active substances. Sows of E group received the "EnzActive Mix" feed additive (produced by "Enzym" LLC, Ukraine) in the amount of 300 g/t of finished feed. The sows were fed with the help of dispensers in the troughs three times a day. The newborn piglets received pre-starter combined feed as supplementary feeding from the fifth day after birth.

Piglets born from sows of the E group received pre-starter feed with the addition of "EnzActive Mix" in the amount of 500 g/t of finished feed. The piglets were fed in special feeders in portions 4–5 times during the day. Young piglets were weaned from sows at 28 days after birth. After weaning, the piglets were transferred to the growing department where they continued to consume this pre-starter feed freely. The duration of feeding was 33 days for sows, 23 days for young piglets, and 14 days for weaned piglets.

The second stage of the study was divided into three technological periods (table 1).

Table 1. Names of piglet fattening periods

Periods	Name of the period	Live weight of the piglet, kg	Period duration, days
1st period	Start	12–30	43–80
2nd period	Grower	30–70	81–118
3rd period	Finish	70–115	119–165

At the beginning of the second stage, starting at 43 days of life, the piglets were divided into 25 animals in each group and fed a standard feed balanced in nutrients and biologically active substances according to the technological piglets' age. For the entire period of fattening, the group received an additional feed supplement "EnzActive Mix" in the amount of 0.3 kg/t. The access to feed was *ad libitum*.

Results and Discussion

Lactating sows need a significant amount of nutrients because they spend a lot of energy during lactation. However, eating large amounts of feed does not always ensure the necessary nutrients intake and absorption. This has adirect impact on milk production and live weight loss during lactation. A number of scientific studies confirmed that the use of probiotics in the feed composition for gestating and lactating sows significantly increases the absorption of nutrients in their bodies, improves digestive processes, and activates protein synthesis by the large intestine microbiota [19, 23]. According to the results of the first stage of the study (table 2) of the effect of the "EnzActive Mix" feed additive on sows and piglets of early age, we see a positive increase in their productivity parameters. When using the additive in feeding sows before farrowing and during lactation, it can be noted that the live weight of the control group decreased by 25 kg, and in the experimental group by 20 kg, which is 2.46% less (P<0.001).

During the experiment, sows of E group consumed less than 1.49% (P<0.01) of feed, which did not have a negative effect on young piglets. Thus, piglets born from sows of E group had lower live weight by 12.59% (P<0.001) relatively to C. Already on the fifth day of life, the live weight of piglets of E group was slightly higher than that of C group by 2.79%. Because the piglets of this age do not yet consume any additional feed except sow's milk, we can assume that this experimental supplement had an impact on the quality composition of milk. Since the fifth day of the piglets life, in the group where they were given pre-starter feed, we see a statistically significant increase in live weight (E) on day 14 (P<0.001) or by 12.92% and on day 28 (P<0.001) or by 15.28% compared to C group. Together with the increase in live weight of young piglets in the E group, there was a slightly increased consumption of pre-starter feed per farrow by 5.6% (P<0.05).

Piglets after weaning in the growing department continued to consume pre-starter feed. After fourteen days of growing, piglets of E group had a significant increase in live weight and average daily gain by 7.69% (P<0.001) (table 3). Feed costs per 1 kg of weight gain are also important factor in feeding piglets. This indicator is better by 21.43% in E group. The results of the study confirm previous studies of various scientists that probiotic cultures have a significant effect on the growth rate of piglets before and after weaning, reducing the number of pathogenic microorganisms in the large intestine, which is manifested in immunostimulating action and affects the safety of piglets [6, 12].

Analyzing the II stage of the study in the 1st period of piglet fattening (table 4), when using the "EnzActive Mix" feed additive in compound feed, the live weight of E group was 15.38% (P<0.001) higher than in C group, and the increase in weight gain was 17.02% (P<0.001). An increase in average daily weight gain by 17.02% (P<0.001) in the E group should be pointed, and the amount of feed consumed to obtain 1 kg of weight gain was 14.61% lower in the E group.

Table 2. Productive performance of lactating sows and young piglets (M±m, n=6)

Parameters	Control (C)	Experimental (E)
Sows quantity, n	6	6
Sows live weight at farrowing, kg	219.75±0.208	219.5±0.287
Sows live weight at weaning, kg	194.75±0.208	199.5±0.287***
Number of farrowings	2–3	2–3
Total piglets born, n	64	65
Live piglets, n	64	64
Stillborn piglets, n	0	1
Live weight of piglets at birth, kg	1.35±0.012	1.18±0.001***
Live weight of piglets at 5 days of age, kg (beginning of pre-starter feeding)	2.15±0.047	2.21±0.029
Live weight of piglets on the 14th day of life, kg	3.25±0.076	3.67±0.013***
Live weight of piglets on the 28th day, kg (weaning)	7.2±0.175	8.3±0.044***
Amount of feed used for sows, kg (from the time of farrowing at the time of weaning)	201.0±0.68	198.0± 0.61**
Amount of pre-starter used, kg (per farrow at the time of weaning)	7.46±0.119	7.88±0.135*
Mortality, %	–	–

Note. In this and the following tables: * — P<0.05, ** — P<0.01, *** — P<0.001.

Table 3. Productivity parameters of rearing piglets (M±m, n=64)

Parameters	Control (C)	Experimental (E)
Piglets quantity, n	64	64
Weight of piglets at weaning, kg	7.2±0.175	8.3±0.044***
Weight of piglets at transition to starter feed, kg	11.1±0.106	12.50±0.063***
Weight gain, kg	3.9±0.24	4.2±0.09
Average daily weight gain, g	280±2.27	300±2.38***
Amount of feed consumed from day 28 to 42, kg	5.5	5.5
Feed conversion rate	1.4±0.013	1.31±0.009***
Mortality, %	–	–

Table 4. Piglet productivity in the 1st fattening period (M±m, n=25)

Parameters	Control (C)	Experimental (E)
Period duration, days	40	40
Piglets quantity, n	25	25
Live weight at the start of the period, kg	11.1±0.08	12.5±0.07***
at the end of the period, kg	29.9±0.13	34.5±1.07***
Live weight gain, kg	18.8±0.16	22.0±0.12***
Average daily weight gain, kg	0.469±0.004	0.550±0.003***
Amount of feed consumed per piglet/day, kg	0.800	0.800
Feed consumption per 1 kg of weight gain, kg	1.71±0.014	1.46±0.008***

When using the feed additive in the 2nd period of fattening, the live weight in the E group increased by 17.94% (P<0.001), compared to the C group (table 5). Average daily gains in the E group were significantly higher (P<0.001) compared to the C group by 17.94%, and feed costs per 1 kg of gain decreased in the E group by 15.35% (P>0.001).

Productivity indicators for the 3rd period of fattening are shown in table 6. There was a significant increase in live weight in E group by 9.89% (P<0.001), average daily gain by 9.89% (P<0.001), and a decrease in feed costs per 1 kg of gain by 9.06% (P>0.001).

The intestine is a complex and multifunctional organ where nutrients are broken down and absorbed into the body. Depending on the structure of the feed consumed by animals, in addition to the assimilation of proteins, fat, energy, etc., non-starch polysaccharides (NSP) β-mannan and arabinoxylan are formed in organism. The structure of these components reduces the interaction of digestive enzymes with the feed substrate, and increases the viscosity of chimus [8]. This leads to a deterioration in the absorption of macronutrients, fat, and protein, which negatively affects growth and significantly reduces feed digestibility. The presence of a large amount of non-starchy polysaccharides or its residues in the intestine leads to the development of coliform bacteria that damage the intestinal mucosa and villi.

Table 5. Piglet productivity in the 2nd fattening period (M±m, n=25)

Parameters	Control (C)	Experimental (E)
Period duration, days	35	35
Piglets quantity, n	25	25
Live weight: at the start of the period, kg	29.9±0.13	34.50±1.07***
at the end of the period, kg	57.2±2.24	66.70±0.63***
Live weight gain, kg	27.3±0.278	32.20±0.100***
Average daily weight gain, kg	0.780±0.0079	0.920±0.0287***
Amount of feed consumed per piglet/day, kg	1.575	1.575
Feed consumption per 1 kg of weight gain, kg	2.02±0.025	1.71±0.005***

Table 6. Piglets productivity in the 3rd fattening period (M±m n=25)

Parameters	Control (C)	Experimental (E)
Period duration, days	47	47
Piglets quantity, n	25	25
Live weight: at the start of the period, kg	57.2±2.24	66.70±0.63***
at the end of the period, kg	103.2±0.086	117.25±0.066***
Live weight gain, kg	46.0±0.27	50.55±0.09***
Average daily weight gain, kg	0.980±0.0058	1.075±0.0019***
Amount of feed consumed per piglet/day, kg	2.700	2.700
Feed consumption per 1 kg of weight gain, kg	2.76±0.014	2.51±0.004***

At the injury site, inflammatory processes occur, accompanied by the release of large amounts of mucin [7], which in turn slows down the passage of nutrients and their absorption.

The introduction of enzymes of plant and fungal origin into the diet promotes the hydrolysis of the main non-starch polysaccharides (NSP), which in turn increases the absorption of available raw materials [7, 15], improves nutrient absorption and pig growth [5, 13].

Taking into account previous studies on the use of enzymes and probiotics, it is shown that a decrease in the level of non-starchy polysaccharides and a decrease in the viscosity of the contents leads to improved absorption of nutrients. Therefore, low levels of NSP do not lead to inflammation of the mucous membranes, do not increase mucin levels, and do not interfere with digestibility. Probiotics support the development of villi, through which nutrients are absorbed, by changing the pH of the environment and enzymes secreting [5, 7, 13, 15].

Conclusion

Based on the results of studies on the use of probiotics and enzymes combination included in the "EnzActive Mix" feed additive in growing piglets feeding, a significant increase in productive parameters was obtained compared to the control group — an increase in live weight, average daily gain, and a decrease in feed consumption per unit of gain when using the same amount of natural feed in the groups.

Prospects for further research

To investigate the effect of the "EnzActive Mix" feed additive on the morphological composition of carcasses, the quality of muscle tissue and to determine the slaughter performance of pigs.

1. Balanchuk IM. Practical application of enzymes in livestock. *Scientific research and their practical application. modern state and ways of development*, 1–12 October 2013. *SWorld*. 2013. Available at: https://www.sworld.com.ua/konfer32/609.pdf (in Ukrainian)
2. Berehovyi MV, Kuzmenko OA. Enzyme preparations effect on the pig's growth indexes for meat pigs growing. *Int. Sci. Pract. Conf. Young*. BNU. Bila Cerkva 2021: 52–54. (in Ukrainian)
3. Berezhniuk NA. Productivity and nutrients digestibility of pigs fed by enzyme preparation *Kemzaim*. *Agr. Sci. Food Tech*. 2019; 2 (105): 4–25. Available at: http://techfood.vsau.org/en/particles/productivity-and-nutrients-digestibility-of-pigs-fed-by-enzym-preparation-kemzaim (in Ukrainian)
4. Bontempo V, Di Giancamillo A, Savoini G, Dell'Orto V, Domeneghini C. Live yeast dietary supplementation acts upon intestinal morpho-fuctional aspects and growth in weanling piglets. *Anim. Feed Sci. Tech.* 2006; 129 (3–4): 224–236. DOI: 10.1016/j.anifeedsci.2005.12.015.
5. Deplancke B, Gaskins HR. Microbial modulation of innate defense: goblet cells and the intestinal mucus layer. *Am. J. Clin. Nutr.* 2001; 73 (6): S1131–S1141. DOI: 10.1093/ajcn/73.6.1131S.

6. Fairbrother JM, Nadeau É, Gyles CL. *Escherichia coli* in post-weaning diarrhea in pigs: an update on bacterial types, pathogenesis, and prevention strategies. *Anim. Health Res. Rev.* 2015; 6 (1): 17–39. DOI: 10.1079/AHR2005105.
7. Ibatullin II, Zhukorskyi OM (eds). *Methodology and Organization of Scientific Research in Animal Husbandry*. A handbook. Kyiv, Ahrarna Nauka, 2017: 328 p. (in Ukrainian)
8. Jiang Z, Wei S, Wang Z, Zhu C, Hu S, Zheng C, Chen Z, Hu Y, Wang L, Ma X, Yang X. Effects of different forms of yeast *Saccharomyces cerevisiae* on growth performance, intestinal development, and systemic immunity in early-weaned piglets. *J. Anim. Sci. Biotechnol*. 2015; 6: 47. DOI: 10.1186/s40104-015-0046-8.
9. Kim JS, Hosseindoust AR, Lee SH, Choi YH, Kim MJ, Lee JH, Kwon IK, Chae BJ. Bacteriophage cocktail and multi-strain probiotics in the feed for weanling pigs: effects on intestine morphology and targeted intestinal coliforms and clostridium. *Animal*. 2017; 11 (1): 45–53. DOI: 10.1017/S1751731116001166.
10. Kim JS, Ingale SL, Hosseindoust AR, Lee SH, Lee JH, Chae BJ. Effects of mannan level and β-mannanase supplementation on growth performance, apparent total tract digestibility and blood metabolites of growing pigs. *Animal*. 2017; 11 (2): 202–208. DOI: 10.1017/S1751731116001385.
11. Kogan G, Kocher A. Role of yeast cell wall polysaccharides in pig nutrition and health protection. *Livestock Sci*. 2007; 109 (1–3): 161–165. DOI: 10.1016/j.livsci.2007.01.134.
12. Kyryliv YI, Prudyus TY, Barulo BS. The effectiveness of using of biologically active fodder addition *Activio* in the diet of broiler chickens. *Sci. Mess. LNU Vet. Med. Biotechnol. Ser. Agricult. Sci*. 2015; 17 (1/61): 80–85. Available at: https://nvlvet.com.ua/index.php/agriculture/article/view/3553 (in Ukrainian)
13. Lee JT, Bailey CA, Cartwright AL. β-Mannanase ameliorates viscosity-associated depression of growth in broiler chickens fed guar germ and hull fractions. *Poult. Sci*. 2003; 82 (12): 1925–1931. DOI: 10.1093/ps/82.12.1925.
14. Markowiak P, Śliżewska K. The role of probiotics, prebiotics and synbiotics in animal nutrition. *Gut Pathogens*. 2018; 10 (21): 2–20. DOI: 10.1186/s13099-018-0250-0.
15. Molist F, van Eerden E, Parmentier HK, Vuorenmaa J. Effects of inclusion of hydrolyzed yeast on the immune response and performance of piglets after weaning. *Anim. Feed Sci. Tech*. 2014; 195: 136–141. DOI: 10.1016/j.anifeedsci.2014.04.020.
16. Prandini A, Sigolo S, Morlacchini M, Giuberti G, Moschini M, Rzepus M, Della Casa G. Addition of nonstarch polysaccharides degrading enzymes to two hulless barley varieties fed in diets for weaned pigs. *J. Anim. Sci*. 2014; 92 (5): 2080–2086. DOI: 10.2527/jas.2012-6199.
17. Sauer N, Mosenthin R & Bauer E. The role of dietary nucleotides in single-stomached animals. *Nutr. Res. Rev*. 2011; 24 (1): 46–59. DOI: 10.1017/S0954422410000326.
18. Shen YB, Piao XS, Kim SW, Wang L, Liu P, Yoon I, Zhen YG. Effects of yeast culture supplementation on growth performance, intestinal health, and immune response of nursery pigs. *J. Anim. Sci*. 2009; 87 (8): 2614–2624. DOI: 10.2527/jas.2008-1512.
19. Simon O. Microorganisms as feed additives — probiotics. *Adv. Pork Prod*. 2005; 16: 161–167. Available at: https://www.banffpork.ca/documents/BO07-SimonO.pdf
20. Susenbeth A, Naatjes M, Blank B, Kühl R, Ader P, Dickhoefer U. Effect of xylanase and glucanase supplementation to a cereal-based, threonine-limited diet on the nitrogen balance of growing pigs. *Arch. Anim. Nutr*. 2011; 65 (2): 123–133. DOI: 10.1080/1745039X.2010.534896.
21. Trckova M, Faldyna M, Alexa P, Sramkova Zajacova Z, Gopfert E, Kumprechtova D, Auclair E, D'Inca R. The effects of live yeast *Saccharomyces cerevisiae* on postweaning diarrhea, immune response, and growth performance in weaned piglets. *J. Anim. Sci*. 2014; 92 (2): 767–774. DOI: 10.2527/jas.2013-6793.
22. Willamil J, Badiola I, Devillard E, Geraert PA, Torrallardona D. Wheat-barley-rye- or corn-fed growing pigs respond differently to dietary supplementation with a carbohydrase complex. *J. Anim. Sci*. 2012; 90 (3): 824–832. DOI: 10.2527/jas.2010-3766.
23. Willing BP, Malik G, Van Kessel AG. Nutrition and gut health in swine. In: Chiba LI (ed). *Sustainable Swine Nutrition*. Chich ester, Wiley, 2012: 197–213. DOI: 10.1002/9781118491454.ch8.

Ефективність використання кормової добавки «ЕнзАктив Мікс» за вирощування свиней

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Дослідження провели в два етапи. У першому етапі дослідження використовували лактуючих свиноматок та народжених від них підсисних поросят, а також відлучених поросят до 43-ї доби життя. Другий етап дослідження проводили на свинях із 43-ї по 165-ту добу життя на етапі відгодівлі. З кожної вікової групи свиней сформували дві групи тварин — дослідну і контрольну. Для годівлі тваринам контрольних груп давали комбікорм, а дослідних — комбікорм з додаванням кормової добавки «ЕнзАктив Мікс». Свиноматкам контрольної групи (К) згодовували стандартний комбікорм для лактуючих свиноматок, а дослідної групи (Д) — стандартний комбікорм із додаванням кормової добавки «ЕнзАктив Мікс» у кількості 0,3 кг/т комбікорму. Підсисні поросята отримували престартерний корм із п'ятої доби життя і до відлучення (28 доба). Поросятам групи Д до корму додавали добавку «ЕнзАктив Мікс» у кількості 0,5 кг/т корму. Поросятам після відлучення у період дорощування продовжили згодовувати престартерний корм. Від 43-ї доби життя поросятам групи Д до стандартного корму давали добавку «ЕнзАктив Мікс» у кількості 0,3 кг/т. Встановлено, що за період досліду, який тривав 33 доби, жива маса свиноматок знизилася на 25 кг (К) і 20 кг (Д), що на 2,44% менше (P<0,001). Додавання підсисним поросятам групи Д добавки «ЕнзАктив Мікс» привело до вірогідного збільшення їх живої маси на 28-му добу життя на 15,28% порівняно з контролем (P<0,001). Через 14 діб у поросят групи Д встановили вірогідне збільшення живої маси та середньодобових приростів на 7,69% (P<0,001), а також конверсії корму на 21,43%. Другий (відгодівельний) етап досліду показав, що за додавання до стандартного корму добавки «ЕнзАктив Мікс» у період відгодівлі з 43-ї по 80-ту добу життя середня маса тварин групи Д була на 15,38% більшою, ніж у групі К (P<0,001), також приріст живої маси та середньодобових приростів збільшився на 17,02% (P<0,001), причому затрати корму на 1 кг приросту в групі Д були нижчими на 14,61% порівняно з групою К. У другому періоді відгодівлі з 81-ї по 118-ту добу життя жива маса в групі Д збільшилася на 15,4% (P<0,001), а приріст живої маси та середньодобові прирости зросли на 17,94% (P<0,001) порівняно з групою К, тоді як витрати корму на 1 кг приросту зменшилися на 15,38% (P<0,001). У третій період відгодівлі, який тривав з 119-ї по 165-ту добу життя тварин, витрати корму на 1 кг приросту в групі Д були вірогідно нижчими на 9,06% (P>0,001), причому спостерігали зростання живої маси та середньодобових приростів на 9,86% (P<0,001).

Ключові слова: поросята, «ЕнзАктив мікс», комбікорм, продуктивність, ензими, пробіотики

Prudius TY, Vishchur OI. Efficacy of "EnzActive mix" feed additive in piglet growing. *Biol. Tvarin*. 2022; 24 (4): 27–31.
DOI: 10.15407/animbiol24.04.027.