

## STRESZCZENIE W JĘZYKU ANGIELSKIM

### **Influence of EM<sup>®</sup> technology produced probiotic microorganisms on porkers production parameters and meat quality**

The research aimed to determine the effect of the quantity and form of administration of lactic acid bacteria (LAB) and *S. cerevisiae* probiotics produced in the EM<sup>®</sup> technology on the quality of meat and its functional features and selected parameters of fattening and slaughter performance of the fattening pigs.

The research was carried out on 96 fattening pigs, assigned to four groups - control and three groups supplemented with probiotics. Supplementation started from 78 days of age to the end of fattening, in various doses in the feed and form: 0.3%; 0.3% + fogging; 0.5%. The same method of keeping and feeding was maintained for all fattening pigs. During the fattening period, body weight gain and weight of fattening pigs were measured and analyzed. Fattening pigs, after reaching a bodyweight of about 110 kg, were slaughtered. After that, the carcass quality features were measured - fleshiness, fat and *longissimus dorsi* muscle thickness, and the weight of warm carcasses were determined. In *longissimus lumborum* muscles, the pH, electrical conductivity (EC), water-binding properties of fresh and frozen meat, colour characteristics, sensory characteristics of raw and heat-treated meat, the basic chemical composition of meat, and cutting force were determined. In the group of functional traits, the profile of fatty acids in meat and back fat, cholesterol content and the content of macro and microelements in meat were determined. In addition, the results of microbiological analyzes of feed, contents and colon mucosa were analyzed.

The research showed that the fattening pigs that received the highest dose of the probiotic preparation and at the same time had the highest amount of LAB in the feed were characterized by the highest concentration of this bacteria in the colon mucosa and the lowest concentration of *Enterobacteriaceae* in both the mucosa and the digestive content of the colon. In relation to this, it was found that supplementation with feed probiotics and simultaneous fogging of the pen with them had the most beneficial effect on the gains and final body weight of fattening pigs, which consequently resulted in higher carcass weight after slaughter. On the other hand, the size of the applied dose of probiotics in the feed did not affect the gains and bodyweight of fattening pigs and, consequently, the weight of their carcasses. Moreover, the fattening production results obtained by the fatteners of these groups were similar to the control group. However, the fattening pigs in the control group had the best weight gain at the end of the fattening period.

In terms of technological quality, the meat of fattening pigs supplemented with the highest dose of probiotic preparation was characterized by the worst self-water binding, as evidenced by the amount of free and thermal leakage, both from fresh and frozen meat. Moreover, probiotic supplementation in fattening pigs increased the hardness of the meat (higher cutting force), regardless of the method of administration and the size of the probiotic dose. It was also shown that porkers supplemented with the highest doses of probiotics were characterized by the highest values of chromatic characteristics of the meat colour, i.e., redness ( $a^*$ ), saturation ( $C^*$ ) and colour tone ( $h^\circ$ ). These studies showed that the meat of fattening pigs supplemented with probiotics in the amount of 0.3% was characterized by the highest content of dry matter, including intramuscular fat and more favourable colour assessment and lower wateriness of raw meat and the lowest electrical conductivity.

In terms of functional characteristics, the meat of fattening pigs supplemented with probiotics in the amount of 0.3% and 0.5% in the feed was characterized by the highest share of PUFA and  $n-3$  fatty acids. Moreover, probiotic supplementation in the amount of 0.3% was associated with the lowest share of SFA fatty acids. On the other hand, the lard of fatteners from the control group had the highest PUFA fatty acids, including  $n-6$ . However, the highest concentration of  $n-3$  fatty acids was found in the lard of fattening pigs supplemented with the highest dose of probiotic preparation. Regardless of the dose and method of administering the probiotic preparation, its effect on the increase of copper content and reduction of sodium concentration in meat was observed. In addition, supplementation with the highest dose of probiotics was associated with a higher zinc concentration in the meat. On the other hand, the iron content in meat was the highest in the groups of fatteners that received the highest dose of probiotics or lower in their feed but were also fogged with it.

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