IgY technology in weaned piglets

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INTRODUCTION

Our experiment was concentrated on monitoring a possibility of exploitation of yolk antibodies as ecological growth stimulators.

MATERIAL AND METHODS

40 piglets weaned at the age of 28 days were included in the feeding experiment; their average weight was 9.98 kg. The piglets were divided in 4 groups, ten piglets in each group. Each group was stalled in a separate stall. All the piglets were fed by the same commercial mixture for weaned piglets (COS); the mixture did not include any growth stimulator. A measured dose of IMUGUARD P (E1 = 0.8 g, E2 = 1.7 g, E3 = 3.1g / piglet / day) was added into the daily feeding dose for piglets in experiment groups. Piglets from control groups (C) were administered no IMUGUARD P. In weekly intervals the weight of piglets and feeding consumption were monitored. The health condition was monitored daily. Piglets were monitored for the period of 21 days. The results were evaluated by the statistic program Qcexpert.

IMUGUARD P contains egg powder and the probiotic microorganism Enterococcus faecium NCIMB 11181. Egg powder is biologically activated and contains not only nutrients but also antibodies (IgY) against the most common pathogens that cause infections of the digestive tract in calves and piglets. It enhances the immunity of the young animals whose immunity mechanisms have not yet been fully developed or have been weakened for various reasons. The immunity-enhancing effect of IMUGUARD arises due to the presence of specific antibodies and lactose-fermenting probiotic microorganisms that prevent the development of digestive disorders in young animals by inhibiting the growth of undesirable bacteria and viruses (rotaviruses, coronaviruses, Escherichia coli K 99, 987 P, K 88, F 18, etc.) in the digestive tract which may attack and damage the intestinal wall. It also increases growth activity and utility of animals.

RESULTS AND DISCUSSION

Average piglet weight in particular weeks and weight gains monitored from the beginning of the experiment are in Table 1. A comparison of given values shows the highest weight always in piglets E3, the lowest in piglets E2; the starting average weight of piglets from all the groups was almost the same. In piglets E1 there was a higher weight in comparison to the control only at the end of the 1st week . There was a similar situation with average daily gain monitored from the beginning of the experiment; it was always the highest in piglets E3, in piglets E2 it was also higher compared to the control group, while in piglets E1 the gain compared to the control group was lower except for the first week .

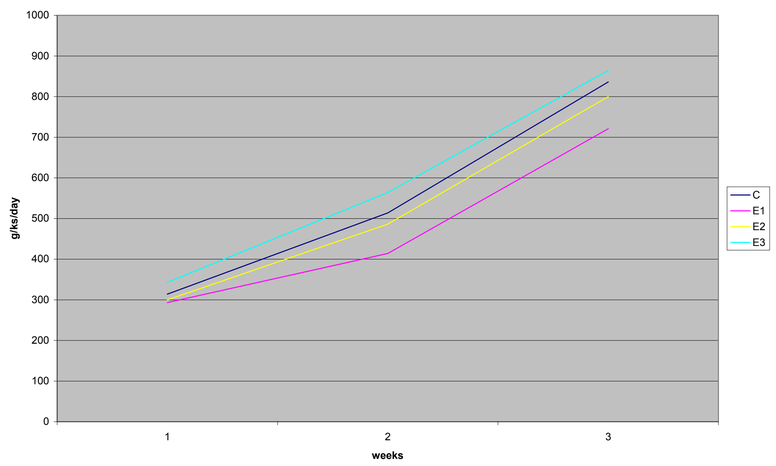
The average daily feed consumption in particular weeks was always the highest in piglets E3, lower in piglets C, the lowest in piglets E1 (Graph 1).

A comparison of weight gain and feed consumption (Graph 2) from the first week shows the maximum feed consumption per kg of gain in piglets that were not administered the yolk antibodies. The feed consumption per kg of gain decreased with increased dose of yolk antibodies. There is a similar tendency at the end of the experiment. The highest consumption per kg of gain during the first two weeks in piglets E1 is probably connected with significant decrease of average gain that was by 5.5 % higher at the end of the first week in comparison to the control and almost by 27 % lower at the end of the second week.

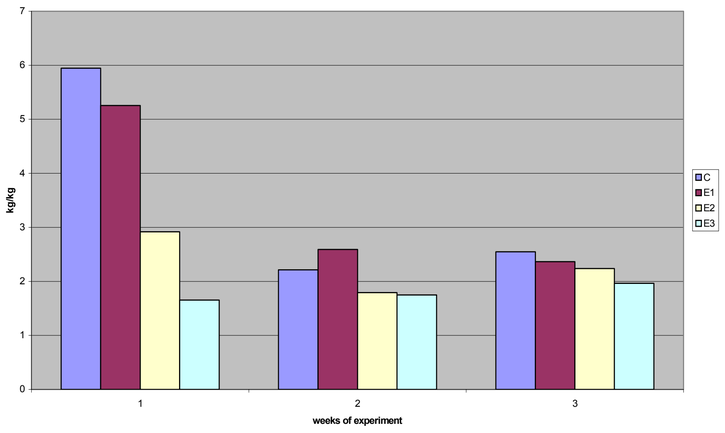
Table 2 shows the influence of yolk antibodies on suppressing the manifestation of stress factors connected with weaning. While monitoring the weight of piglets at the end of the first week of the experiment we found out that only 5 piglets from the control group increased their weight compared to the weight at weaning, in other 5 the weight was reduced. With growing dose of yolk antibodies the percentage of piglets with reduced weight during the first week reduced. Only one piglet from the group E3 did not change its weight, the weight of the others increased. The loss of weight in a special amount of piglets during the first week can be put in connection with feed consumption per kg of gain in this period.

While using the dose of 3.1 g of IMUGUARD P per piglet and day (group E3) we observed an increase of gain and final weight during the after-weaning period in comparison to the negative control and to piglets that were administered lower doses. In this group we found out also the lowest feed consumption per kg of gain and at the same time a tendency of higher feed consumption. Only in this group from all the monitored ones no piglet did reduce its weight during the first after-weaning period. The dose of 3.1 g of IMUGUARD P per piglet and day can be considered stimulating in experiment stalls of our institute.

Graf 1: The average feed consumption in particular weeks



Graf 2: The feed consumption per kg of gain in particular weeks



Tab. 1: Weight and gain of piglets during experiment

		C	E 1	E 2	E 3
Starting weight	kg	9,98	9,98	9,99	9,97
	Sx	2,138	1,827	2,004	2,1
	index	100	100	100,10	99,90
Weight 1st week	kg	10,35	10,37	10,71	11,42
	Sx	2,559	2,296	2,715	3,064
	index	100	100,19	103,48	110,34
Daily gain from the beginning of exp.	g	53	56	103	207
	Sx	181,5	159,7	184,2	146,5
	index	100	105,66	194,34	390,57
Weight 2nd week	kg	12,6	11,89	13,06	13,6
	Sx	2,894	2,549	3,146	4,293
	index	100	94,37	103,65	107,94
Daily gain from the beginning of exp.	g	187	136	219	259
	Sx	109,9	93,1	124,1	166,2
	index	100	72,73	117,11	138,50
Weight 3rd week	kg	14,55	14,21	14,95	16,28
	Sx	4,222	3,165	3,54	4,77
	index	100	97,66	102,75	111,89
Daily gain from the beginning of exp.	g	217	201	236	300
	Sx	128,7	87,4	95,4	133,4
	index	100	92,63	108,76	138,25

Tab. 2: Changes of the weight of piglets during the first week of experiment

	C	E1	E2	E3
Reducing weight % of piglets	50	30	20	0
Keeping weight % of piglets	0	10	10	10
Increasing weight % of piglets	50	60	70	90

CONCLUSION

Based on the obtained results we can claim that yolk antibodies can be used as an ecological alternative of antibiotic growth stimulators. Because of supposed different microbial load of particular breeds the dose of 3.1 g of IMUGUARD P per piglet and day can be used as a starting dose for determining the particular efficient dose for particular breed.

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