

THE EFFECT OF THE ZEOLITES USED IN FEEDING OF WEANED PIGS ON THE MAIN BIOPRODUCTIV INDICATORS

EFFECTUL ZEOLIȚILOR FOLOSIȚI ÎN HRANA TINERETULUI SUIN ASUPRA PRINCIPALILOR INDICI BIOPRODUCTIVI

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The experiment was carried out over a group of 34 weaned piglets, allotted into two equal groups. The control group (C) received a basal diet supplemented with a 1% premix - vitamins and microelements as oxides and salts mixed with maize flour-based diet; and the experimental group (E) received the same diet supplemented with 1% premix made of vitamins and microelements as chelated phosphoric glass on zeolite based diet. At the end of our research it was revealed that group (E) obtained a better growing gain, 6.3%, greater feed intake, 0.7%, and a smaller feed conversion rate of 6.2% versus group (C).

Key words: weaned piglets, zeolites, microelements

Introduction

Zeolites are hydrous, aluminum-silicates, crystalline substances, with a tridimensional structure, having the capacity of reversible losing or retaining of water and constitutive cations, a feature that confers specific property to absorb and to have ions exchange.

These properties and the specific chemical composition draw attention over the use of zeolites in animals food.

After more then three decades of researches and experiments regarding zeolites in animal food there came two options some authors: (2, 4, 6) believe that mixing zeolites in swine food (3 to 15%) does not influence favorable growth performances; others (1, 3, 5) show that a 3 to 5% zeolite supplementation in food determines an improvement of growth speed, increases food conversion degree, prevent the appearance of some digestive problems, reduces housing concentration of noxious gases. In this paper we've studied the utilization of zeolite from Mirșid as a base support for the obtaining of a 1% premix with chelated vitamins and microelements compared with premixes based on vitamins and microelements (obtained from salts), using ground cereal as base structure forage.

Materials and Methods

In this experiment 34 weaned pigs at around 40 days of age, weight 8.5-8.6 kg, were divided into two equal groups: control group (C) that received a 1% premix with vitamins and mineral salts on a base diet of fine ground maize, and the experimental group (E) received a 1% pemix with chelated vitamins and microelements on a base diet of zeolite powder. Vitamins supplementation level was the same for both groups, and the microelements were supplemented in accordance with the needed level for the group (C).

Chelated minerals were provided at a 10 time smaller level to group (E) versus group (C).

Throughtout the experiment both groups were fed *ad libitum* with a feed mixture which provides 3145 ME Kcal/kg and 16% CP.

During the experimental period (60 days) both group (C) and group (E), were housed in the same conditions.

There were done monthly weighing for all pigs and it had been in view food intake during the 60 days of experiment.

Results and Discussions

The results were statistically translated and processed, as shown in the Tables 1,2,3 and 4. Data from the Table 1 show that group (E) had greater weight (4.8%) versus group (C) but the differences had not become statistically provided. In Table 2 are shown the daily average gains for the two groups. The analysis of daily average gain for both groups is shown in Table 2.

Statistically, group (E) reached higher daily average gains, of 6.3% compared with group (C). Gaining differences being statistically provided. Analyzing data from Table 3, there is observed that food intake of group (E), throughtout the entire experiment is about 1066 kg of feed mixture, with 0.7% greater versus group (C) who's food intake was only 1073 kg.

Table 1

Bodyweight rates for weaned pigs from the two groups

| Age (in days) | Control group (C) | | | Experimental group (E) | | | |
|---------------|-------------------|-------------------|------|------------------------|-------------------|------|------|
| | n | $\bar{X} \pm S_x$ | V.c. | n | $\bar{X} \pm S_x$ | V.c | t |
| 40 | 17 | 8.5±0.15 | 7.1 | 17 | 8.6±0.16 | 7.6 | N.S. |
| 70 | 17 | 18.7±0.43 | 9.5 | 17 | 19.3±0.47 | 10.1 | N.S. |
| 100 | 17 | 31.5±0.93 | 12.2 | 17 | 33±1 | 12.6 | N.S. |

Table 2

Weaned pigs daily bodygain evolution in the two groups

| Age (in days) | Control group (C) | | | Experimental group (E) | | | |
|---------------|-------------------|-------------------|------|------------------------|-------------------|------|------|
| | n | $\bar{X} \pm S_x$ | V.c. | n | $\bar{X} \pm S_x$ | V.c | t |
| 40 | 17 | 340±6 | 7.2 | 17 | 357±6.8 | 7.8 | N.S. |
| 70 | 17 | 427±12.5 | 12.1 | 17 | 457±14 | 12.5 | N.S. |
| 100 | 17 | 383±9 | 9.7 | 17 | 407±10 | 10.2 | N.S. |

Table 3**Food intake evolution in the two groups**

| Groups | From 40 to 70 days | From 70 to 100 days | From 40 to 100 days | %(E) vs. (C) |
|--|--------------------|---------------------|---------------------|--------------|
| Group (C) (total food intake in kg) | 454 | 616 | 1073 | |
| Group (E) (total food intake in kg) | 444 | 622 | 1066 | 99.3 |
| Group (C) (daily medium food intake in kg) | 0.89 | 1.21 | 105 | |
| Group (E) (daily medium food intake in kg) | 0.87 | 1.22 | 105 | 100 |

Table 4**Feed conversion rate evolution in the two groups of weaned pigs**

| Groups | From 40 to 70 days | From 70 to 100 days | From 40 to 100 days | %(E) vs. (C) |
|------------------------------|--------------------|---------------------|---------------------|--------------|
| Group (C) (kg food/kg gain) | 2.62 | 2.83 | 2.74 | |
| Group (E) (kg food /kg gain) | 2.44 | 2.67 | 2.57 | 93.8 |

Table 4 shows that the feed conversion rate throughout the experiment regarding group (E) is 2.57kg feed/kg live weight, with 6.2% smaller than group (C) who had a 2.74 feed conversion rate.

Conclusions

Giving to weaned pigs a 1% premix with a composition of chelated vitamins and minerals as phosphoric glass on a base zeolite meal versus 1% classical premix, determined an improvement of the growth dynamic of 6.3%, an increase of the food intake of 0.7% and a decrease of the feed conversion rate of 6.2%.

Bibliography

1. **Bedelean I., Stoici S.D.** - 1984 Zeoliții- Ed. Tehnică București, pag. 47-56
2. **Georgeta Nichita, Sărăndan H., Maria Moisuc, Rodica Căpriță, Moisescu V., Maria Stepănescu** -1985- Cercetări privind efectul utilizării tufului zeolitic în hrana păsărilor. Lucrări Științifice I.A.T. vol. XX, pag. 147-159
3. **Hațeganu V., Puia I., Popa O., Balton Gh., Sabău AI.** - 1979 Utilizarea zeoliților naturali în hrana animalelor. Lucr.Științ seria Zootehnie și Med.Vet. voi. 33, pag. 159-167
4. **Hălmăgean P., Cârpan FI., Milos M., Rodica Covăsânzan, Rotaru M., Lixandru B., Brigitte Sava, Sinitean Șt., Brancov Z.** -1986-Utilizarea tufului vulcanic zeolitic în hrana porcinelor supuse îngrășării. Rezultate obținute în faza I experimentală Lucrări Științifice I.A.T. vol. XXI, pag.27-31.
5. **Jose Luis Gonzales** - 1995 New achievements in zeoponic practice, zeolite meeting'95 Sofia pag 104-105
6. **Polen T., Polen Lilia.** – 2004 - The effect of some forage additives used in feeding of weaned pigs, Lucr. șt. Zoot și Biot. Vol XXXVII, Timișoara pag. 113-116