RESULTS OF ZINC BACITRACIN ADDITION TO DIETS FOR GROWING PIGS

E. VAZQUEZ y J. LAGREE.
FACULTAD DE CIENCIAS VETERINARIAS. U.M.L.P.
CALLE 60 y 118. LA PLATA. 1900. ARGENTINA.

Many antibiotics have been added to rations for growing pigs in order to increase their daily weight gain and improve their efficiency. Such substances are considered as growth - - promoters for in general they reduce the adverse bacterial population in the gut thus improving the absorption of nutrients. Experiences - - carried out so far have shown that increased contamination causes a change in the morphology of intestinal villus. It was also found that the addition of Zinc Bacitracin 100 ppm.reduces the number of oxytetracycline resistant - - Escherechia coli in pig faeces, and that - - transference resistance to this antibiotic was lower in the group receiving Zinc Bacitracin (Walton, 1975).

Zinc Bacitracin added to diets for pigs over 20 kg/w improved the growth rate by 11% and feed effieiency by 6% compared against control animals (Livingstone, 1967).

With the addition of virginiamycin and tylosin, 9.6% and 7.5% improvement in piglets growth rate is obtained respectively, as well as - better feed efficiency compared against control animals (De Wilde and Vanschoubroek, 1971).

Virginiamycin and oxytetracyclin promote - - muscle development, mainly clear ones - - - (longissimus dorsi), compared with dark one (gracilis). (Ivandija, 1979).

The purpose of this trial was to compare Zinc Bacitracin action at 20, 50, 100 ppm, added to rations for growing pigs from 25 kg. to slaughter.

40 pigs, Hampshire and Landrace cross, were used divided into four treatment groups of 10 animals each. A 4 x 3 factorial system, 4 treatments and 3 replicates, was used.

The pigs performances were evaluated from an average starting weight of 24.8 -0.4 kg. up to 39 -0.8 kg. (Period A); then on till an intermediate weight of 68.5 -0.8 kg. - - - (Period B); and afterwards up to 103.5 -0.5 kg (Period C), when the animals were sacrified.

Food was given in a pellet form and - - - - distributed in automatic feeding troughs, that is "ad libitum", and so was the water contained in esplike drinking troughs.

Four treatments were chosen and numbered: T0 (control lot); T20, T50, T100 were - - - supplemented with 20, 50,100 parts/million of Zinc Bacitracin.

A study of the results obtained indicate that during the growing period A - from 24 to - - 39 kg. average weight - animals in lots T20 and T50 got an extra daily weight gain 8.2% and 8.5% over the control treatment, a - - statistically sig ificative difference.

Comparing the results of lots T20 and T50, we notice that while there was a difference of 2 g. less daily gain in lot T20, feed - - - efficiency in the same lot was improved by 18% with a lower feed consumption than in lot T50.

During period B, lot T50 had the highest weight gain and the highest feed consumption, the latter being 9%, 7.5% and 7.8% above treatments T0, T20 and T100 respectively. However, the loss in feed efficiency was only 3% compared to other lots.

During period C, the highest daily gain was obtained by lot T100, exceeding lot T20 by 4% - second one for this variable - and T50 by 7.3%. Feed efficiency in lot T50 was improved by 10% and 13% compared to lots T100 and T20 respectively.

Zinc Bacitracin consumption during the - - - different periods studied increased - - - - proportionally, i.e. in lot T20 77% and 30%/kg of metabolic weight gained during periods AB and BC, this being directly related to consumption increase as the animals grew.

This trend is also noticed in the ramining two treatments but it should be pointed out that in spite of an increased antibiotic - content in the diet by 150% and 100% for lots T50 and T100, the differences of antibiotic required to obtain 1 kg. of $W^{0.75}$ increase during each one of the three periods is - - inversely proportional to the Zinc Bacitracin increase in the diet.

Comparing these results with those obtained by Rosen, 1978, who found an improvement in feed efficiency of 2.7%, 5.2% and 7.5% for treatments including 20, 50 and 100 ppm. of Zinc Bacitracin, we notice that they are only coincident as refers to T20 where a 3% - - improvement in total feed efficiency was obtained. Our results were better for T50 with 11% average improvement obtained, and poorer for T100 with 2.6% improvement.

It should be taken into account that these results might differ from those obtained in high contamination establishments for, - - according to reports by Sharman and Peters, 1971, mentioned by Tournut, 1978, There - - exists a 14% positive difference in daily gain between conventional and low contamination establishments. There was a decrease in the dorsal fat thickness of those animals receiving Zinc Bacitracin compared with control lot representing 8.4%, 10.8% and 5.6% for lots T20, T50 and T100 respectively. In view of the above difference without a decrease in the growth rate as happens when restricted or - celulosic feeding systems are used (Baird et al. 1975; Barber et al. 1972; Dinusson et al. 1968), we think these results could be related to the proven ability of some antibiotics like virginiamycin and oxytetracycline to promote muscle growth, as it was found that the development of giant muscle cells as favoured trough the addition of said additives (Ivandija, 1979).

Conclusions: Concluding, we may report that during the growing period, from 25 to 40 kg/w a statistically significative difference in the growth rate of lots receiving Zinc Bacitracin 50 and 20 ppm. was obtained. From 39 to 69kg/w the use of Zinc Bacitracin 50 ppm.as growth promoter improves daily gain by 6% compared to control lot. From 70 kg to final weight, the addition of Zinc Bacitracin 100 ppm. improves the daily gain by 10% over control.

Selected references: Baird,D.M.et al.(1975) J.Animal Sci. U.S.A. 41,no.4, 1039; Barber,R. S.et al.(1972)Animal Product,14,no.2,199; Dinusson,W.E.et al.(1968)North Dakota,Res. Report,N°21,January,1-8;Ivandija,L.(1979) Veterinarski Archiv.49,5,211; Livingstone,R.M. (1967)Proceeding of the Holmenkollen Symposium Antibiotics in Anim. Nutrition.Oslo 3er-5th March; Rosen,G.D.et al.(1978)3rd World Congress on Anim. Feeding,VIII,120.Amprimes Relieves Arsango,Madrid; Tournut,J.(1978)J.Rech.Porc. France,277; Walton,J.R.(1975)Department of Veterinary Preventive Med. Univ. of Liverpool Veterinary Field Station "Leahurst" Neston, Wirral, England; Wilde De,R.,Vanschoubroek,F. (1971)Vlaams Diergeneeskd.T. Belg.,40, no.5, 217-223.