

Observations on Aureomycin and APF for the Pig. (18226)

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(Introduced by Paul B. Pearson)

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Jukes *et al.*(1) showed that aureomycin would produce a growth response with the pig when added to diets containing B₁₂ and B_{12b}. This increase in rate of growth was approximately equal to that obtained from supplementation with an aureomycin fermentation product designated APF (Lederle).

In the experiment reported herein, Series 1 was conducted to determine the effect of aureomycin supplementation over a longer period than was previously reported by Jukes *et al.*(1). Series 2 was conducted to determine whether APF Supplement 2 contains a growth promoting factor(s) besides aureomycin and B₁₂ and to determine if supplementation with aureomycin in addition to APF Supplement 2 would result in a further increase in the rate of gain.

Materials and methods. The basal ration used in both series consisted of ground yellow corn 57, peanut meal (hydraulic) 41.5, bone meal 0.5, limestone 0.5 and salt-trace mineral mixture 0.53 lb (the salt-trace mineral mixture consisted of iodized salt 50 lb, manganese sulfate 951 g, ferrous sulfate 398 g, copper sulfate 125 g and cobalt carbonate 10 g). Vitamins A and D and the seven B-complex vitamins which the pig has been shown to need in the ration were added at levels previously described by Cunha *et al.*(2). In Series 1, 4 purebred Duroc pigs were fed in each lot. Five grade native pigs (of mixed breeding and which had been depleted on a maintenance ration since weaning) were fed in each lot in Series 2. The pigs were fed on concrete floors which were washed once daily. Series 1 was conducted for 54 days and Series 2 for 67 days.

Results and comments. The results obtained in Series 1 show that aureomycin supplementation considerably increased the rate of gain. During the 37-day trial, the higher level of aureomycin (lot 3) was more beneficial in stimulating growth than the lower level (lot 2). The optimum level of aureomycin is not known yet and it may differ depending on the kind of basal ration used.

In both series, the pigs fed aureomycin and those on APF Supplements 1 and 2 had considerably more bloom and a smoother hair coat than the pigs on the basal ration plus B₁₂. The hemoglobin values were higher with the pigs fed either aureomycin or APF Supplement 1 (Series 1).

In Series 2, supplementation of aureomycin in addition to 1% of APF Supplement 2 (lot 2) in the ration did not increase the rate of growth over that obtained with 1% of APF Supplement 2 in the ration (lot 3). This shows that 1% of APF Supplement 2 in the ration supplied enough aureomycin for the pig. The supplementation of the basal ration with 3% of APF Supplement 2 (lot 4) caused an increase in rate of gain over that obtained with 1% of APF Supplement 2 or with 1% of APF Supplement 2 plus aureomycin. Therefore, the increase in rate of gain caused by 3% of APF Supplement 2 indicates that some factor(s) other than aureomycin and B₁₂ in APF Supplement 2 benefited growth for the pig. Whether APF Supplement 2 was supplying some unknown factor(s) or some known factor which might be low in the basal ration remains to be determined. The level of APF Supplement 2 which will adequately supply the needs of the pig for aureomycin has not yet been determined but a level of 1% supplied enough aureomycin under the conditions of this trial. At the level APF Supplement 2 was added in lot 3 it was supplying 60 mg of aureomycin per kilo of diet.

1. Jukes, T. H., Stokstad, E. L. R., Taylor, R. R., Cunha, T. J., Edwards, H. M., and Meadows, G. B., *Arch. Biochem.*, 1950, v26, 324.

2. Cunha, T. J., Hopper, H. H., Burnside, J. E., Pearson, A. M., Glasscock, R. S., and Shealy, A. L., *Arch. Biochem.*, 1949, v23, 510.

TABLE I. Series 1—Effect of Aureomycin Supplementation.

Lot No.	Avg initial wt in lb.	Supplement/kg basal diet	Avg daily gain in lb. first 37 days	Avg daily gain in lb. total 54 days	Hb.§
1	35.6	44 γ vit. B ₁₂ (as concentrate) †	0.77	0.75	10.7
2	35.8	44 γ vit. B ₁₂ + 50 mg aureomycin	1.30	*	—
3	35.6	44 γ vit. B ₁₂ + 200 mg aureomycin	1.61	1.69	13.1
4	35.6	10 g APF†	1.36	1.46	12.0

* Lot 2 was stopped after being on experiment 37 days.

† Vit. B₁₂ concentrate contained approximately equal parts of vit. B₁₂ and B₁₂ and had at least 10 mg of vit. B₁₂ activity per g of solids.

‡ Supplement 1 was a commercial APF supplement (8108-109) prepared from the aureomycin fermentation at Lederle Laboratories. By microbiological assay, Supplement 1 was found to contain about 3 mg of aureomycin per g. Its B₁₂ content by chick assay appears to be about 4 μ g per g. The APF, aureomycin and B₁₂ were obtained from Dr. T. H. Jukes, Lederle Laboratories, Pearl River, N. Y.

§ Average of hemoglobin at end of 54 days.

TABLE II. Series 2—Effect of Aureomycin and Supplement 2.

Lot No.	Avg initial wt in lb.	Supplement/kg basal diet	Avg daily gain in lb., 67 days
1	42.5	1.5 g methionine* + 27.5 γ vit. B ₁₂ †	0.76
2	41.7	1.5 g methionine + 10 g APF‡ (1%) + 100 mg aureomycin‡	1.26
3	44.5	1.5 g methionine + 10 g APF (1%)	1.26
4	44.8	1.5 g methionine + 30 g APF (3%)	1.56

* DL-methionine supplied through the courtesy of Dr. H. J. Prebluda, U. S. Industrial Chemicals, New York City.

† Vit. B₁₂ concentrate (fuller's earth) from Dr. D. F. Green, Merck, Rahway, N. J.

‡ Supplement 2 (lot 24) was similar to Supplement 1 except that microbiological assay indicated its aureomycin content was 6 mg per g.

Summary. Aureomycin supplementation produced considerable growth response with the pig when added to a diet containing vitamin B₁₂ and B₁₂. APF Supplement 2 contains some factor(s) other than aureomycin and B₁₂ which accelerates growth in the young

pig with the basal ration used. One per cent of APF Supplement 2 in the ration supplied enough aureomycin for the pig under the conditions of this experiment.

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Desoxycorticosterone Hypertension and Ammonium Chloride.* (18227)

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Prolonged administration of desoxycorticosterone acetate (DCA) results in the development of hypertension in a variety of animal species including man(1-4). In the

rat, this is accompanied by a condition of

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4. Perera, G. A., Knowlton, A. I., Lowell, A., and Loeb, R. F., *J. A. M. A.*, 1944, v125, 1030.