

General Observations Concerning Additives

All trials reported here were conducted under somewhat ideal conditions. Pens were always cleaned and disinfected before pigs went into them. All pigs were from the same background and were approximately the same age and size when they went on test. Pigs were always fed in small groups. Care and management were at a rather high level.

A zero additive or control was not included in any of the above trials. The Aureomycin-fed group was considered as a control, since Aureomycin has been fed at low levels at this station for a number of years.

Under actual field conditions any or all of the additives may perform differently. One should not plan to substitute an additive for good management, good sanitation procedures, or good housing. With field conditions where it is virtually impossible to maintain ideal conditions, the proper additive may help improve animal performance. That every additive increases feed costs must be considered when evaluating additive response under any set of conditions.

Dietary NaNO₂, NaCl, K₂SO₄, or Urea for Growing-finishing Pigs (Project 311).

B. A. Koch and D. B. Parrish¹

Nitrates are known to harm animals when ingested under certain conditions. Previous work here indicated that a high level of dietary nitrate might interfere with carotene conversion to vitamin A. This trial attempted to determine whether such interference does exist and also whether other dietary additives might interfere in carotene conversion.

Experimental Procedure

Twenty-four weanling pigs, 12 Duroc and 12 three-way crossbreds, six barrows and six gilts from each breed, were divided into six treatment groups of four pigs each. Each group was further divided so each pen contained one Duroc and one crossbred pig and one gilt and one barrow.

The pigs had been vaccinated for cholera and erysipelas before going on test. They also had been wormed with liquid piperazine. They had access to a heated automatic waterer and a two-hole self-feeder. Each ration was freshly mixed and pelleted every two or three weeks. Composition of the rations is listed in Table 18.

Observations

Results are reported here primarily to show that growing-finishing pigs can tolerate rather high levels of these materials without serious effects. None of the additives had an apparent effect on the blood serum vitamin A level. Pigs consuming 4 percent urea in their diet made the highest average daily gain.

¹ Department of Biochemistry, K.S.U.

Table 23
Dietary NaNO₂, NaCl, K₂SO₄, and urea for growing-finishing pigs. (Feeding period started December 10, 1963, and ended February 27 or March 3, 1964.)

Treatment ¹	Control	+1.2% NaNO ₂	+4% NaNO ₂	+4% NaCl	+4% K ₂ SO ₄	+4% urea
Ration No.	67	67-A	67-E	67-C	67-D	67-B
No. of pigs	3 ²	4	4	3 ²	4	4
Av. on-test wt., lbs.	82	87	87	76	93	85
Av. off-test wt., lbs.	207	221	201	190	226	221
Av. daily gain, lbs.	1.50	1.63	1.39	1.39	1.58	1.68
Standard error	±.05	±.20	±.13	±.16	±.22	±.02
Feed efficiency, lbs.	3.94	3.83	4.01	4.14	3.80	3.78
Serum vitamin A, units per 100 ml. (at slaughter)	38.2	37.3	40.9	35.5	34.8	35.2

¹ The additive replaced sorghum grain in the ration.

² One pig died in each group. Cause of death was not related to the ration being fed.