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EFFECTS OF ULTRA PIG KRAVE EXTRA® ON STARTER PIG PERFORMANCE

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Summary

A growth study and a preference study were conducted to evaluate the effect of a commercially available flavoring agent on starter pig performance. A total of 192, 3-wk old, weaned pigs were utilized. A 2-phase starter program was used in the growth study. Half the pigs received creep feed with added flavor and half without, beginning at 10 days of age. Pigs receiving flavored feed at 10 days of age had significantly better gains and feed intake the first 2 wk postweaning than pigs on nonflavored feed. The pigs in the preference study demonstrated a clear preference for flavored vs nonflavored feed. These results indicate addition of flavor to a creep diet beginning at 10 days of age will increase feed intake and gains in the nursery. However, when a creep feed is fed, addition of flavor to a nursery diet did not result in improved performance.

(Key words: Pigs, Early Weaning, Flavor, Creep Feed.)

Introduction

In an effort to increase production and overall herd efficiency more and more producers are weaning pigs at 3 wk of age. This helps to increase sow productivity by increasing litter per sow per year, but it introduces a whole new set of problems to the producers. "Post-weaning lag" is a management problem associated with early weaning. This lag in growth performance immediately postweaning is largely attributable to low feed intake. Starter diets have undergone drastic changes in the last 10 to 15 yr, incorporating many ingredients that increase feed intake such as dried whey, dried skim milk, fish meal, copper sulfate, and fat. Why these ingredients increase feed intake is not known. Some researchers have suggested that they improve palatability or acceptance of the feed to the pig. Some workers feel the pig's sense of taste is not very keen; however, others feel that it may be sufficiently developed to affect the pig's acceptance or rejection of a feed and, thus, influence intake.

This study was designed to evaluate the effect of a commercially available feed flavoring agent. In particular, it was designed to examine the effect of added flavor in a 2-phase starter program on growth performance during the first critical weeks post weaning.

Procedure

Trial 1. Trial 1 was a growth study utilizing a total of 168 pigs from 24 litters. Sows were farrowed in a total confinement environmentally controlled farrowing facility. Two days after farrowing, litters were equalized and divided into two primary groups (1 and 2) of 12 litters each (Fig. 1). At 10 days of age, while still on the sow, pigs were introduced to the phase I diet as a creep feed (Table 1). Group 1 received creep feed with flavor (Ultra Pig Krave Extra®) added, and group 2 received creep feed without flavor. A small two-hole self feeder was placed in each farrowing pen, allowing pigs unlimited access to feed.

Pigs were individually weighed and weaned at 23 ± 2 days of age into an environmentally controlled nursery facility. Pigs within each group were blocked by weight

and randomly assigned to pens with 6 pigs/pen and 7 pens/treatment. Animals were housed in pens (4 ft x 5 ft) with woven wire floors over a Y-flush gutter, with one nipple waterer and one four-hole self-feeder per pen.

At weaning, half the pigs in group 1 were switched from the creep diet with flavor to the diet without flavor, the other half were left on the diet with added flavor. Similarly, half the pigs in group 2 were switched from the creep diet without flavor to the diet with added flavor. At 2 wk postweaning all pigs were switched to a phase II diet (Table 1) with or without added flavor. Those pigs receiving the phase I diet with flavor were switched to the phase II diet with flavor. Likewise, pigs receiving nonflavored feed in phase I were continued on nonflavored feed in phase II.

Feeders were checked twice daily. Feed was weighed out and added or weighed back and recorded as necessary. Feeder weights and individual pig weights were collected weekly. Criteria measured were average daily gain (ADG), average daily feed intake (ADFI), and feed efficiency (F/G). The trial was conducted for 5 wk postweaning.

Trial 2. Trial 2 was a preference study utilizing 24 weaned pigs 24 ± 3 days of age. Pigs were blocked by weight and randomly allotted to pens with 4 pigs/pen. Two 4-hole self feeders were placed in each pen. One feeder contained feed with added flavor, and the other feeder contained feed without flavor. The position of the feeders in each pen was changed every other day to prevent pigs from eating out of a particular feeder by habit and force them to seek out their feed of preference. Feed was offered ad libitum. Feeders were checked twice daily. Feed was weighed out and added or weighed back and recorded as necessary. Feed intake was collected weekly. The trial was conducted for 3 wk postweaning. No creep feed was offered to these pigs prior to weaning.

Results and Discussion

Trial 1. Results of Trial 1 are presented in Tables 2 and 3. Pigs in group 1 received the phase I diet with flavor as a creep feed from 10 days of age to weaning. Pigs in group 2 received the phase I diet without flavor as a creep feed from 10 days of age to weaning. Pigs in group 1 gained better ($P<.05$) than pigs in group 2 (Table 2) for the first 2 wk postweaning. However, there were no differences in ADG by the end of the trial.

Although there were no differences in ADFI by the end of the trial, pigs in group 1 did have higher ADFI ($P=.05$) during the first 2 wk postweaning (Table 2). There were no differences observed throughout the trial for F/G.

At weaning, half the pigs in group 1 were switched from the phase I creep diet with flavor to the phase I diet without flavor. Switching from a creep diet with flavor to a diet without added flavor resulted in ADG and ADFI similar to the pigs that remained on the diet with flavor (Table 3). Likewise, switching half the pigs in group 2 at weaning from the phase I creep diet without flavor to the phase I diet with flavor resulted in ADG and ADFI the same as pigs that remained on the phase I diet without flavor (Table 3). By the end of the trial, ADG and ADFI were the same for all treatment combinations.

Trial 2. Results of Trial 2 are presented in Table 4. Pigs demonstrated a clear ($P<.01$) preference for feed with added flavor. Pigs consumed 5.7 times as much feed with flavor as feed without flavor.

The results of these trials indicate that in a 2-phase starter program in which the phase 1 diet is offered as a creep diet beginning at 10 days of age, the addition of Ultra Pig Krave Extra to the phase 1 diet will enhance ADG and ADFI through the critical, first 2 wk

postweaning. The health of the animals on this study was excellent and environmental conditions were near ideal.

In an intensive production program where ventilation may be marginal, the disease challenge may be more serious due to over-crowding, and some pigs may have to be weaned at 18 or 19 days of age to make room for new litters, feed intake during the first 2 wk postweaning is critical. Feed intake is as important as gain during the period immediately postweaning. The use of a flavor in a starter diet is no substitute for good sound nutrition, but if the nutrition is right, this study shows that the addition of flavor to a creep diet can increase feed intake and gains through the first 2 wk postweaning.

Table 1. Composition of Experimental Diets¹

Ingredient	Phase I	Phase II
Corn	31.08	40.75
Soybean meal	14.73	30.16
Dried whey	20.00	20.00
Dried skim milk	20.00	
Soy oil	10.00	5.00
Dicalcium phosphate	1.87	1.86
Limestone	.57	.78
Lysine	.35	.25
Methionine	.10	
Selenium premix	.05	.05
Copper sulfate	.10	.10
Salt	.30	.30
Trace mineral premix	.10	.10
Vitamin premix	.25	.25
Antibiotic	.50	.50

¹Ultra Pig Krave Extra® was added at a rate of 4 lbs/ton.

Table 2. Effect of Ultra Pig Krave Extra® Fed during Lactation on Subsequent Nursery Performance

Item	Period ²	Unit	Group 1 ¹	Group 2 ¹
ADG	wk 0 - wk 2 ³	lb	.72 ^a	.61 ^b
	wk 0 - wk 5	lb	1.07	1.06
ADFI	wk 0 - wk 2 ⁴	lb	.56 ^a	.49 ^b
	wk 0 - wk 5	lb	1.41	1.40
F/G	wk 0 - wk 2		.78	.79
	wk 0 - wk 5		1.31	1.31

¹Group 1: pigs in group 1 received the phase I diet with added flavor (I+) as a creep feed from 10 days of age to weaning. Group 2: pigs in group 2 received the phase I diet without flavor (I-) as a creep feed from 10 days of age to weaning.

²Time period postweaning.

³Means with unlike superscripts are different (P<.01).

⁴Means with unlike superscripts are different (P=.05).

Table 3. Effect of Ultra Pig Krave Extra® on Starter Pig Performance

Item	Period	Unit	Group 1 ¹		Group 2 ¹	
			- ²	+ ²	- ²	+ ²
ADG ³	wk 0 - wk 2	lb	.75 ^a	.70 ^a	.60 ^b	.60 ^b
	wk 0 - wk 5	lb	1.08	1.05	1.09	1.04
ADFI	wk 0 - wk 2	lb	.55	.57	.50	.48
	wk 0 - wk 5	lb	1.40	1.40	1.41	1.41
F/G	wk 0 - wk 2	lb	.74	.81	.78	.80
	wk 0 - wk 5	lb	1.30	1.34	1.29	1.35

¹Pigs in Group 1 received the Phase I diet with added flavor (I+) as a creep feed from 10 days of age to weaning. Pigs in Group 2 received the Phase I diet without flavor (I-) as a creep feed from 10 days of age to weaning.

²Indicates feed with added flavor (+) or without (-) flavor fed postweaning.

³Means with unlike superscripts are different (P < .05).

Table 4. Effect of Ultra Pig Krave Extra® on Feed Preference

Item	Period	Unit	Flavor	No Flavor
ADFI ¹	wk 0 - wk 3	lb	.97 ^a	.17 ^b

¹Means with unlike superscripts are different (P < .01).

Fig. 1. Distribution of experimental treatments in Trial 1.¹

DAYS OF AGE	GROUP 1 ²	GROUP 2 ²
10		
23 (weaning)		
37 (2 wk post-weaning)		
58 (5 wk post-weaning)		

¹ I+ = Phase I diet with flavor
 I- = Phase I diet without flavor
 II+ = Phase II diet with flavor
 II- = Phase II diet without flavor

² Pigs in group 1 received the phase I diet with flavor as a creep feed from 10 d of age to weaning. Pigs in group 2 received the phase I diet without flavor as a creep feed from 10 d of age to weaning.