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Effect of Spray-Dried Animal Plasma in Lactation Feed in a Segregated-Parity Sow Herd

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Introduction: Spray-dried animal plasma (SDAP) increases feed intake in weanling pigs and is thought to conserve inflammatory immune response, particularly at the intestinal mucosa. Heat stress reduces voluntary feed intake in sows resulting in maternal weight loss and reduced days to breeding. The objectives of this study were to evaluate the effects of SDAP (Appetein™) in lactation feed on sow feed intake, pig survival to weaning, days to estrus, and subsequent litter size in a segregated-parity commercial sow herd.

Dietary Treatments: Lactation feed treatments were pelleted and contained either 0 or 0.5% dietary SDAP and were formulated to be equivalent in metabolizable energy (3322 kcal/kg) and true digestible lysine content (0.94%). Major ingredients included corn, soybean meal, wheat midds and choice white grease. No other animal proteins, metabolic modifiers or antimicrobials were included in the dietary treatments.

Animals and Facilities: The study was done at a commercial farm (The Hanor Company, Inc., Ames, Oklahoma) that practices segregated parity management and involved 894 PIC sows. Parity 1 (P1) and parity 2 (P2) sows were housed at separate sites and parity 3 and older sows (P3+) were housed at two other separate sites. Each site had 16 farrowing rooms with 28 crates per room. There were 4, 4 and 8 rooms assigned per treatment by parity 1, 2 and 3+ sows that provided 112, 112 and 223 sows per treatment by parity group. Sows farrowed during August and September when heat stress would be expected to reduce feed intake. Since one feed bin supplied feed to 2 farrowing rooms, treatment was assigned to feed bins. An automated feed system delivered 4 feedings per day. Daily feed delivered was recorded on individual sow feed record cards. Diets were fed from the day the sows entered the farrowing room until weaning. Creep feed was not offered to pigs. Data collected included individual lactation feed intake, lactation days, pigs fostered and weaned per litter, pig survival to weaning, days to estrus, and number of pigs born alive during the next litter.

Results: Significant treatment effects ($P < 0.05$) by parity are presented in Table 1. Pig survival to weaning was improved ($P = 0.0260$) for P3+ sows fed SDAP (92.0%) compared to control sows (89.3%). However, the number of pigs started per litter was less ($P < 0.0001$) for P3+ sows fed SDAP. When pigs started were used as a covariable, pig survival adjusted means for P3+ sows fed SDAP remained greater than control sows (91.4 vs 89.9%), but treatment effects were less significant ($P = 0.2067$). Lactation length (average 18.4 days) was longer ($P < 0.0001$) for P1 sows fed SDAP, but shorter ($P < 0.0001$) for P3+ sows fed SDAP. Average daily feed intake (ADFI) was greater ($P < 0.0001$) for P1 and P2 sows fed SDAP, but less ($P = 0.0094$) for P3+ sows. Lactation length did not influence the significance of treatment effects ($P < 0.04$) for ADFI for each parity group. For P1 sows fed SDAP days to estrus ($P = 0.0002$) and non-productive days ($P = 0.07$) were reduced. Neither lactation length, pigs started per litter or ADFI reduced the significance of the reduced days to estrus due to SDAP when these variables were used in covariable analysis. Percentage of P1 sows in estrus by day 7 was increased 22% when fed SDAP ($P = 0.0004$). Sow attrition rate (cull and death loss) during lactation or before breeding was not affected by dietary treatment. Farrowing rate tended ($P = 0.0816$) to be reduced for P3+ sows fed SDAP. Pigs born alive in the subsequent litter was not affected by previous lactation treatment.

Table 1. Response to SDAP in Lactation Feed

Variable	Parity	SDAP, %	
		0.0	0.5
Pig survival, %	P3+	89.3	92.0
ADFI, kg/d	P1	4.3	4.8
ADFI, kg/d	P2	5.0	5.5
ADFI, kg/d	P3+	5.8	5.5
Days to estrus	P1	8.3	5.7
% in estrus D7	P1	60.2	82.2

Conclusions: Spray dried animal plasma (0.5%) increased daily feed intake in P1 and P2 sows and reduced days to estrus and percentage in estrus by day 7 in P1 sows. Pig survival was improved in older sows (P3+) fed SDAP.