ANDROSTENONE AEROSOL AND AZAPERONE INJECTION INFLUENCE ON PIG AGGRESSIVE AND SUBMISSIVE BEHAVIORS

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ABSTRACT

A total of 80 nursery-age pigs were used to compare the effectiveness of azaperone and androstenone on reducing the aggressive and submissive behavior in freshly mixed pigs. Forty pairs of unfamiliar barrows and gilts were placed in pens for 24 hr. Duration of aggressive and submissive behavior by each pig were recorded and analyzed. Results showed that androstenone reduced the total duration of aggressive and submissive behavior to levels below that of the control pigs ($p = .069$). This effect was eliminated for aggressive behavior when both azaperone and androstenone were applied ($p > .4$). Both azaperone and androstenone reduced submissive behavior below control levels ($p < .05$). In conclusion, androstenone is more effective than azaperone an reducing pig agonistic behaviors, and androstenone's anti-aggressive property was reduced when given in combination with azaperone.

Key Words: Pigs, behavior, aggression.

INTRODUCTION

Often during normal hog farm operations, unfamiliar pigs are brought together and fight to establish a dominance order. This fighting causes decreased productivity and possible injury to the pigs involved (reviewed in McGlone, 1986). Androstenone, a naturally occurring pheromone in pigs, has previously been shown to reduce aggressive behavior in nursery-age pigs (McGlone and Morrow, 1988). Recently, intramuscular injections of azaperone, also was shown to reduce aggressive behavior in pigs and cause mild traquilizing effects (Gonyou et al., 1988). This study was designed to determine the effectiveness of androstenone, azaperone or both drugs in combination in reducing agonistic behavior (aggressive and submissive) in nursery-age pigs.

METHODS

A total of 80 five- to eight-week old pigs were used to determine the effect of azaperone on their agonistic behaviors. Unfamiliar pigs were matched by weight, placed into barrow-gilt pairs and randomly assigned to one of four treatments. Treatments were 1) androstenone only (5 μg/pig, dissolved in isopropyl alcohol, aerosolized and applied to each pigs' snout), 2) azaperone[2] (2.2 mg/kg, im injection), 3) androstenone and azaperone and, 4) no treatment (control).

Two blocks were used with 24 pairs in the first block conducted over six days and 16 pairs in the second block over four days. Each day, four pairs (one pair/treatment) were placed in separate 2 x 2 m pens and administered treatments. Each pen was equipped with a 5-hole feeder along one side from which feed was available ad libitum. A nipple waterer was on the opposite side of the pen.

Pigs were video taped via time-lapse video recorders for 22 h after placement in pens. After testing, pigs were removed to pens away from pigs yet to be tested. Videotapes were later summarized to determine duration of agonistic behavior (aggressive and submissive behavior). Aggressive behavior was defined as alternating pushes and bites. Submissive behavior was registered when one pig turned its body away from the attacking pig. These agonistic behaviors were derived from the ethogram collected by McGlone (1985).

Video records were viewed at three times real-time speed. Filming was at a speed of one frame per 1.2 seconds. Data were registered in an electronic event recorder using validated data collection techniques (Arnold-Meeks and McGlone, 1986).

There were 10 complete blocks in this study. Data were analyzed using analysis of variance as a randomized complete block with a 2 x 2 factorial arrangement of treatments (SAS, 1985). Behavior data were normalized by performing a log transformation. However, for simplicity, data are presented as raw means (p-values represent transformed data). Means were separated by the least-significant difference test.

RESULTS AND DISCUSSION

Results for agonistic behaviors are shown in Table 1. Submissive behavior was reduced in pigs treated with androstenone ($p < .05$), regardless of azaperone treatment. Azaperone had no effect on pig submissive behavior. Aggressive behavior was not significantly affected by treatments. This finding is in contrast to previous studies that showed androstenone and azaperone each reduced pig aggression (Gonyou et al., 1988; McGlone and Morrow, 1988).

An examination of the means in the present study does, however, support the previous work. McGlone and Morrow found androstenone (in the same dose and application scheme as used here) reduced pig aggression by 90% ; in the present work androstenone-treated pigs had a 72% lower mean compared with the control. Gonyou et al., (1988) found azaperone reduced pig aggression by 39%; in the present study azaperone-treated pigs had 36% lower duration of aggression. Thus, experiment-wise replication of each drugs' anti-aggressive property was documented without in-study statistical significance.

The combination of azaperone and androstenone was less effective than androstenone alone in reducing total agonistic behavior (Table 1). This may be due to a sedative effect which appeared to occur in the pigs treated with azaperone — delaying fighting beyond when the androstenone may have worn off. The manufacturer suggests azaperone effects last six to eight hours.

Data in this study showed considerably more variation than previous work. Reasons for this increased variation are unclear. Normally five replicates per treatment are sufficient to detect treatment effects on agonistic behavior (McGlone, 1986). With 10 replications per treatment this study failed to replicate previous findings. Clearly a very poor understanding of mechanisms controlling pig agonistic behavior still exists, and this makes it difficult to consistently reduce this harmful behavior.

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[2]Stresnil, donated by Pitman-Moore, Washington Crossing, N.J. 08560.

Table 1. Effect of androstenone and azaperone on the agonistic behavior of nursey pigs.

		Duration of behavior, min.		
Treatment	N	Aggressive	Submissive	Total Agonistic
Androstenone	10	2.43	.83[b]	3.26[d]
Azaperone	10	5.52	1.21[b,c]	6.73
Androstenone+ azaperone	10	6.42	.89[b]	7.31
Control	10	8.58	1.74[C]	10.32[d]
Standard Error		2.14	.34	2.35
P-values				
Androstenone[a]		.280	.048	.219
Azaperone[a]		.591	.423	.168
Interaction		.192	.234	.168

[a]P-values associated with main effects.

[b,c]Means with common superscripts do not differ, P>.05.

[d]These means differ P= .069, by unprotected least significant difference test.

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