

PREVENTION OF ANESTRUS AFTER WEANING IN FIRST LITTER GILTS AND SOWS WITH ALFAPROSTOL,
A NEW PGF ANALOG.

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Anestrus after weaning in sows, but especially in first litter gilts, is a form of infertility increasingly reported and which is of dire economical consequences (1). Modern management methods with rapidly increasing herd sizes seem to intensify this trend. A strong seasonal component has been widely reported, with an increasing incidence of post-weaning anestrus during and after the hot summer months (1).

In many countries, PMSG, or PMSG/hCG combinations are used routinely at or shortly after weaning for the prevention, or reduction of anestrus (2). PMSG, and often also hCG, are not available in a number of countries, e.g. PMSG in the USA. Since GnRH has been found ineffective, a substitute for PMSG is wanted, especially since claims are heard from the pig industry that with the repeated use of PMSG or PMSG+hCG, the drug's efficacy is declining.

This situation led to the exploration of the gonadotropin releasing effect of alfaprostol (VETEM S.p.A., Italy) as a potential preventive treatment for post-weaning anestrus in the pig. Treatment with exogenous PGF_{2α} is known to release gonadotropins in the bovine (3). Studies with alfaprostol in the bovine and the equine showed similar gonadotropin releasing activities (4,5). Pilot studies in Switzerland (6) were encouraging enough to initiate field trials under conditions of large scale industrial pig production.

MATERIAL AND METHODS:

Sows and gilts (Swedish Landrace) on farms with 1,500 to 3,000 brood sows were used, located in Northwest Yugoslavia. Management included heat observations twice daily, two inseminations during any heat, and pregnancy detection by ultrasound one month after breeding. Piglets were weaned after 21 days in the morning hours. At the day of weaning, in the early afternoon, sows or gilts received 1, or 2 mg (ml) of alfaprostol solution i.m., saline treated animals were used as controls. In two trials, a total of 200 sows and 200 gilts were treated; 186 gilts and 203 sows served as controls.

RESULTS:

Since results obtained in sows and first litter gilts were very similar, data were pooled. As shown in table 1, alfaprostol, in both the 1 and 2 mg dose used, significantly shortened the interval between weaning and heat, and increased the percentage of animals coming into heat significantly. Conception rates at first heat breeding and litter size at farrowing confirmed no adverse effects on fertility and fecundity.

Table 1: Effects of Alfaprostol Given After Weaning on Heat and Fertility (Trial 1).

Alfaprostol; Dose	1 mg	2 mg	1+2	contr.
No. of sows & gilts	100	100	200	189
Percentage in heat:				
within 10 days	85.0 ⁺	83.0 ⁺	84.00 ⁺	65.5 ^o
within 30 days	93.0	96.3	94.7	80.8
Interval treatment to heat (days), \bar{x}	5.7 ⁺	6.3 ⁺	6.0 ⁺	11.13 ^o
Farrowing rate	82.2	69.1	75.6	76.6
Litter size, total			10.3	10.3

Subscripts: + vs o in the same line: p<.01.

In trial 2, first litter gilts and sows were treated with 1 and 2 mg alfaprostol, respectively, during July and August when high levels of anestrus were to be expected. This was confirmed, as shown in table 2, by the markedly lowered percentage of sows and gilts in heat by day 10 after weaning, and the significantly prolonged interval between weaning and heat. This trend was even more pronounced in gilts.

Table 2: Effects of Alfaprostol Given After Weaning During Summer (Trial 2).

Alfaprostol, Dose	Gilts		Sows	
	1 mg	contr.	2 mg	contr.
No. of animals	100	100	100	100
Percentage in heat within 10 days	81 ⁺	47 [*]	82 ⁺	62 [*]
within 30 days	89	86	95	83
Interval treatment to heat (days), \bar{x}	5.9 ⁺	17.4 [*]	5.6 ⁺	9.7 ^o
Farrowing rate	78.6	76.3	74.7	80.2

Subscripts: + vs o: p<.05; + vs *: p<.01

Alfaprostol treatment resulted in a reversal of these tendencies; the percentage of animals showing heat within 10 days was significantly increased and the overall interval to heat sharply reduced. Conception rate at this early heat was normal.

DISCUSSION:

In both trials treatment with alfaprostol reduced the extent of temporary anestrus and shortened the interval to estrus. Follow up studies by third parties in which alfaprostol was given at, or immediately after weaning, were without such effects (7,8), while ongoing studies with alfaprostol administration 24 h after weaning seem encouraging (9). Interaction between the length of the lactation period, the dose of alfaprostol used, the interval between weaning and treatment and the best time for both, as well as advantages over treatments with PMSG/hCG, are presently investigated, together with alfaprostol effects on hormonal blood levels.

SUMMARY:

Alfaprostol, a new PGF analog, when given six or eight hours after weaning at 1 or 2 mg (ml) to sows or first litter gilts with a 21 day lactation period, reduced sharply the incidence of temporary anestrus and the interval between weaning, heat and conception. Fertility and fecundity were normal. This effect was especially marked during the hot summer months. The optimal interval between weaning and treatment has not been determined. Treatment at weaning seems to have little effect.

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