

CONTROL OF PARTURITION, STILLBIRTH RATE AND OF THE OCCURRENCE OF MMA WITH ALFAPROSTOL, A NEW PGF ANALOG.

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Induction of parturition in sows and gilts, with PGF_{2α} or its analogs, approximately 30 to 48 h before term, has become a well established procedure in the pig industry worldwide. Its main advantage is the occurrence of most of the induced parturitions during the working hours of the day after treatment; and with it increased supervision of delivery and better care for piglets (1). Claims have been made also for beneficial effects of PGF induced parturition on the incidence of stillbirth and of the MMA (mastitis, metritis, agalactia) complex, respectively, but have not been confirmed by others (1). Hence, when developmental work with a new PGF analog, ALFAPROSTOL (VETEM S.p.A., Italy) was initiated, observations on these and other parameters were included.

This presentation is a review of a number of trials partly published (1,2) or in the process of being published in extenso elsewhere (3,4,5), which were conducted over a 4-year period in Yugoslavia (1,3), Austria (4), West Germany (5) and Ireland (2), and covering a variety of herd sizes and breeds, and of geographic, climatic and management conditions.

MATERIAL AND METHOD: A total of 997 sows and gilts were treated for induction of parturition on day 112 (111-114) of gestation; a dose range of 1 to 3 mg alfaprostol (1 to 3 ml of a solution, i.m.) was used. A total of 1149 untreated animals served as controls. Treatments were spread over all seasons. In several studies, other PGF analogs were used simultaneously (1,2, and 5).

RESULTS: Since data from treatments ranging from day 111 to 114 and over the range of doses given did not differ significantly in any of our studies, all data were pooled.

Treatment induced parturition in 95.6 to 100% of the animals. As shown in table 1, the average interval of treatment to induced parturition was 26.58 h, with 49.15 h for untreated controls. Most parturitions had occurred within 30 h, and between 67.2% and 84.6% during the time period of 20 to 30 h after treatment.

Table 1: Summary from Field Trials with Alfaprostol for the Induction of Parturition.

No. of animals treated (control)	Induced parturition			Ref.
	% within 30 (33) h	% within 20 (23) - 30 (33) h	Interval to farrowing, h	
370 (488)	90.8	84.6	27.3 (49.0)	1
49 (19)	87.74	71.16	24.6 (51.1)	2
82 (38)	78.42	69.89	-	3
222 (250)	-	67.21	27.7	4
274 (354)	86.07	78.46	25.4	5

As shown in table 2, induction of parturition reduced the overall incidence of stillbirth; this effect was significant in 2/6 studies, the trend confirmed in altogether 4/6 of the studies.

The incidence of MMA was reduced in all five studies in which detailed observations were made (Table 2). In one detailed trial (1), herds with either a year-round high incidence of MMA, or with a seasonal peak of MMA during the warm season, were compared; animals were treated at various seasons. A significant MMA reducing effect was seen under both conditions (1).

Duration of induced parturition was observed in six trials: in comparison with untreated controls, it was

reduced in 4/6, and prolonged in 2/6 of these trials (1,2,3,4,5).

Table 2: Occurrence of Stillbirth and MMA.

Number of stillborn piglets per litter		MMA incidence in % of sows or gilts		Ref.
Induced	Control	Induced	Control	
0.47	1.01*	9.46	37.47**	1
1.51	1.10	-	-	2
0.58	0.68	10.99	18.40	3
0.70	1.00	8.10	15.10	4
0.80	0.50	18.60	24.77	5
Total, overall trials:				
0.67	0.84	11.64	24.40	

*Differences significant: $p < .01$; ** $< .001$.

The percentage of piglets weaned did not differ between treated and control groups (2,3,5); in one study (1), percent survival at day 10 was significantly greater in litters after induced parturition. This parameter is frequently distorted by disease and management factors unrelated to treatment. Return to estrus after weaning and fertility at first breeding was not influenced in either study. In one study, the percentage of sows culled due to anestrus was significantly reduced after induced parturition (1). In all studies in which other PGF analogs were used at the recommended dose, (Planate: 1,4; Prostianol: 4) no differences were found in all parameters mentioned above. No clinical side effects were observed in any of these trials.

DISCUSSION: Alfaprostol, over the dose range tested, effectively induced parturition and in the majority of the studies reported here, reduced the incidence of stillbirth, and of MMA, and the duration of parturition. It had no adverse effect on the percentage of piglets weaned, or postweaning fertility. In herds with a high incidence of MMA, it may improve chances for piglet survival and reduced the extent of postweaning anestrus (1). The mechanism of action regarding its effect on MMA is unknown.

Since 0.5 mg are not sufficiently effective (unpublished observations), 1 mg of alfaprostol is the minimum effective dose; with 3 mg not providing any improvement over the other two doses; 2 mg are presently regarded as the optimal effective dose of alfaprostol. At this, and the 1 mg and 3 mg dose as well, alfaprostol is equally effective as other PGF analogs at the recommended dose.

SUMMARY: Alfaprostol, a new PGF analog, when given to sows and gilts on day 112 (111-114) of gestation over a range of doses (1 to 3 mg/ml), effectively induced parturitions (95-100%). Most parturition (87.62%) had occurred within 30 (33) h after treatment. The overall incidence of stillbirth was slightly reduced (0.67 vs 0.84 stillborn piglet) as was the incidence of MMA (11.64 vs 24.40%). Postweaning fertility was not impaired. Reduction in the incidence of MMA might also reduce cullings due to anestrus after weaning.

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