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Farrowing interval in crossbred sows treated with hormones during peripartum period

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ABSTRACT

Crossbred sows of Tamworth X Desi breed were treated with $PGF_2\alpha$ and /or oxytocin either on day 111 of gestation or after the birth of first piglet. Weaning was performed either on day 48 or 56 and the sows were mated during the first and subsequent estrus postweaning. Farrowing interval was significantly shorter in all the treatment groups as compared to control. The interval was apparently shorter in the group of sows where weaning was practiced on day 48 as compared to 56.

Key words: Farrowing interval, peripartum period, sows, $PGF_2\alpha$, oxytocin

Farrowing interval is one of the most important trait in pig farm economics. This in turn is dependent entirely on weaning to conception interval. During normal farm practice weaning is performed on day 56 and first estrus is expected within 10 days. Not all sows conceive during this estrus and therefore, weaning to conception interval increases further. During the present study two hormones namely $PGF_2\alpha$ and oxytocin were administered either during the terminal phase of pregnancy i.e. day 111 (group I & II) or after the birth of first piglet (group III & IV) with suitable controls (group V & VI). Two weaning schedules day 48 and day 56 were followed and the data regarding the exhibition of first and fertile estrus were collected. Farrowing intervals in both the groups were calculated and a comparison with the earlier farrowing intervals of the same sows was made.

MATERIALS AND METHODS

Study was conducted on Tamworth X Desi, Tamworth and LWY breed of sows maintained at Pig Breeding Farm, Ranchi Veterinary College. One hundred twenty sows due for parturition belonging to different genotypes, age and parity were randomly allotted to six experimental groups having twenty animals in each group. Farrowing interval (days) of individual sows before start of treatment was recorded and their averages were calculated.

Group I (n=20) The sows of this group were injected 5 mg (1 ml) of $PGF_2\alpha$ (Lytalyse)* I/M route on day 111.

Group II (n=20) The sows received 5 mg (1 ml) of $PGF_2\alpha$ I/M route on day 111 along with 20 IU (4 ml) oxytocin (Evatocin)** I/M route after the birth of first piglet.

Group III (n=20) The animals were injected with NSS on day 111 along with 5 mg of $PGF_2\alpha$ I/M route after the birth of first piglet.

Group IV (n=20) The animals received NSS on day 111 along with 20 IU oxytocin I.M route after birth of first piglet.

Group V (n=20) The animals were injected with NSS through the same route at two occasions i.e. on day 111 (1 ml) and after the birth of first piglet. (4 ml).

Group VI (n=20) The animals were injected 1 ml of Normal saline solution (NSS) through the same route to serve as control.

Subsequent to weaning all the sows were watched for estrus symptoms, both morning and evening in presence of a male. Appearance of 1st estrus were recorded.

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RESULTS AND DISCUSSION

Farrowing interval:

Critical difference test presented in Table 1 indicated significantly lower farrowing interval (181.8±4.82 to 191.0±4.14 days) in all the treatment groups in comparison to control groups (202.9±3.95 to 207.2±3.52 days) either weaned at day 48 or day 56. Apparently sows weaned at day 48 showed lower farrowing interval in comparison to sows weaned at day 56. In control groups of sows, also comparatively longer farrowing interval (206.9±3.02 to 207.2±3.52 days) obtained in sows weaned at day 56. Analysis of variance showed a significant (P<0.01) effect of treatment on farrowing interval.

Table 1: Average farrowing interval (days) of sows.

Days of weaning	Treatment groups					
	I	II	III	IV	V	VI
48	183.6[a] ± 4.75	182.3[a] ± 3.06	181.8[a] ± 4.82	186.5[a] ± 4.19	202.9[b] ± 3.16	203.8[b] ± 3.37
56	187.5[a] ± 3.37	184.4[a] ± 2.50	190.2[a] ± 5.79	191.0[a] ± 4.14	207.2[b] ± 3.52	206.9[b] ± 3.02

All the means are the average of 10 observations. Means under the same superscript did not differ significantly.

Average farrowing interval in pre and post treatment

Paired 't' test was done to see the effect of treatment on farrowing interval of the same sow pre and post treatment. Significantly (P<0.01) reduced farrowing interval varying from 181.8±4.82 to 191.00±4.14 days was recorded in all the four groups of sows after the treatment in comparison to the farrowing interval ranging from 119.0±2.98 to 206±3.15 days before the commencement of treatment in the same sows. Whereas, the differences in farrowing interval of the sows pre and post treatment were non-significant in all the control groups under study except for sow in control groups V and VI weaned at day 48 (Table 2).

Results of this study are in close agreement with the findings of Orzechowska (1990) and higher than Kaplon (1984), Qunitana Erodozain (1985) and Moskal *et al.* (1989), Lactation length, age of sows, litter size and month of mating significantly affected the farrowing interval (Oliveira, 1984).

Present study further revealed that the farrowing interval in general was lower in the same sows after treatment for induction when compared to their earlier farrowing intervals (Table 2).

It appeared from these findings that $PGF_{2\alpha}$ and/or oxyton had a beneficial effect on farrowing interval which might be due to increase in myometrial contractility and thereby producing cleansing effect on the involuting uterus (Ray 1996). This probably led to earlier conception and thereby shortened farrowing interval in the sow of treatment groups as compared to control.

Table 2: Average farrowing interval (days) of sows pre (weaned day 56) and post treatment (weaned day 48/5[illegible] in various groups.

Treatment Groups	Pretreatment		Post treatment		't' value
	Days of weaning	Farrowing interval	Days of weaning	Farrwoing interval	
I	56	201.0±3.89	48	183.6±4.75	7.43**
	56	199.0±2.98	56	187.5±3.37	6.52**
II	56	206.2±3.15	48	182.3±3.06	7.65**
	56	200.1±3.52	56	184.4± 2.50	5.81**
III	56	205.0±4.78	48	181.8±4.82	9.48**
	56	206.0±4.21	56	190.2±5.79	5.15**
IV	56	202.0±5.06	48	186.5±4.19	5.68**
	56	200.4±3.33	56	191.0±4.14	3.70**
V	56	208.7±4.90	48	202.9±3.52	3.57**
	56	209.7±3.71	56	207.2±3.52	1.82[NS]
VI	56	208.1±3.04	48	203.8±3.37	2.53*
	56	210.3±3.71	56	206.9±3.02	2.25[NS]

* -P<0.05, ** -P<0.01, NS = Non significant
All the means are the average of 10 observations.

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