INDUCED PARTURITION IN SWINE

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Two experiments were conducted to determine the effect of flumethasone, a synthetic glucocorticoid, on the gestation length of pigs. The reasons for terminating pregnancy shortly before anticipated parturition are numerous. The presence of toxemia of pregnancy, renal disease, fractures, cardiovascular disease or other problems may necessitate the premature termination of pregnancy. Such interruptions also may be desired for convenience, as in medical or other research projects. A more important reason of commercial value may be a follow-up of a synchronized breeding program. A planned or synchronized induction of parturition would control the young pig crop to a single birthday.

The ability of the glucocorticoids to induce premature labor and parturition has been observed in several studies. Evidence that the corticoids of the fetus are involved in the initiation of parturition in sheep was presented by Bassett and Thorburn (1969). They found that the levels of corticosteroids in the fetal lamb increased over basal levels several days prior to and after birth. Liggins (1968) observed the effects of infusing cortisol or adrenocorticotropin (ACTH) into fetal lambs. Infusing cortisol into the fetus in late gestation was followed by premature parturition within five days of treatment. The infusion of ACTH into the fetus had much the same effect. The premature induction of parturition in cattle was studied by Adams (1969). Parturition was induced by administration of dexamethasone, another synthetic glucocorticoid. Calving occurred 22 to 56 hours after the intramuscular injection of 10 mg of dexamethasone. Similar results were obtained in beef cows by Wagner, **et al.** (1971). Parturition was induced prematurely in cows, using either 20 mg of dexamethasone or 7.5 mg of flumethasone. However, a high incidence of retained placenta was reported.

In order to study the effects of flumethasone on the gestation length of sows, two trials were arranged. In the first trial, 14 pigs were injected eight days prior to the expected farrowing date with either 10 cc of saline or 10 cc of flumethasone (.5 mg/cc). The control pigs farrowed approximately 10 days after the saline injection. The flumethasone pigs farrowed an average of seven days after treatment. The treatment effect was found to be significant (P .01). There was, however, a large

Table 1. Induction of parturition using flumethasone.[1]

	Saline[2]	Flumethasone
No. Pigs	7	7
Interval from treat. to birth (days)	10.00[3]	6.80[3]
Std. Dev.	1.29	1.46
Range (days)	9-12	5-9
Birth Wt. (lb)	2.70	2.42
Std. Dev.	0.54	0.62

[1]5 mg Flumethasone administered I.M. 8 days prior to expected parturition date.
[2]10 cc saline administered I.M. 8 days prior to expected parturition date.
[3](P less than .01)

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range in the farrowing date of the treated pigs. Two pigs farrowed five days after treatment, while one pig farrowed nine days after treatment. Retained placentas were observed in two of the seven treated pigs.

In the second trial, 23 sows were injected four days prior to the expected farrowing date with either 10 cc of saline or 5 mg of flumethasone. The 11 pigs treated with flumethasone farrowed an average of four days after treatment, while the 12 control pigs farrowed an average of five days after saline injection. This treatment effect was found to be significant ($P < .10$). Only one of the treated pigs had a retained placenta. The time from treatment to farrowing in the flumethasone pigs ranged from three to five days, but the control pigs farrowed anywhere from one day to eight days after saline injection. The onset of parturition in one control sow the day following injection of saline reduced the mean of the control group such that greater significance was not attained. In both trials there were no significant differences in the birth weights of control or treatment pigs. The average litter size for both trials was slightly greater than 10 pigs, with no significant differences between the two treatment groups.

Generally speaking, it can be concluded that the pigs treated with flumethasone tended to farrow earlier when compared to the control pigs. There was no serious problem with retained placentas in the experiment. Because of the variations in the farrowing date among pigs in the treatment and control groups, an exact farrowing date for flumethasone-treated pigs was not established. The value of this treatment depends on whether or not parturition dates can be selected for with accuracy. So far this accuracy has not been demonstrated.

Table 2. Induction of parturition using flumethasone.[1]

	Saline[2]	Flumethasone
No. Pigs	12	11
Interval from treat. to birth (days)	5.33[3]	4.00[3]
Std. Dev.	2.01	0.77
Range (days)	1-8	3-5
Birth Wt. (lb)	2.77	2.72
Std. Dev.	∓0.55	∓0.36

[1]5 mg Flumethasone administered I.M. 4 days prior to expected parturition date.
[2]10 cc saline administered I.M. 4 days prior to expected parturition date.
[3](P less than .10)

References

1. Adams, William M. 1969. **The elective induction of labor and parturition in cattle.** J. Am. Vet. Med. Assn. 154:261.
2. Bassett, J. M. and G. D. Thorburn. 1969. **Foetal plasma corticosteroids and the initiation of parturition in sheep.** J. Endocrinol 44:285.
3. Liggins, G. C. 1968. **Premature parturition after infusion of corticotrophin or cortisol into foetal lambs.** J. Endocrinol 42:323.
4. Wagner, W. C., R. L. Willham, and L. E. Evans. 1971. **Induced parturition in the beef cow.** J. Anim. Sci. 33: 1164.