

PREGNANCY DIAGNOSIS IN EWES

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SUMMARY

Scrum progesterone (P₄) level in 37 ewes (Finn X Ossimi or Rahmani) was estimated on days 12, 13, 14, 15, 16 and 17 post-insemination. Gradual increase in P₄ level occurred (2.6, 2.5, 3.2, 3.3, 4.2 and 3.5 ng/ml) with a maximum level on day 16.

Based on discrimination level of P₄ 1 ng/ml for pregnancy diagnosis a group of 49 bred ewes were tested on days 15, 16 and 17 showed an increase in the accuracy of positive pregnancy prediction as time advanced post service. P₄ level on days 15, 16 and 17 were 3.3, 4.2 and 3.4 ng/ml with an accuracy pregnancy predication of 78.7, 82.2 and 94.7, respectively. Accuracy of negative pregnancy test was 100% on all tested days.

Pregnancy prediction based on non return to estrus on day 23 post service in a group of 126 ewes showed an accuracy of 91.9 and 100% for positive and negative pregnancy prediction, respectively.

Ultrasonic technique (A-Scan) was used for pregnancy diagnosis in 114 served ewes. Accuracy of positive pregnancy prediction during the periods 29-45, 46-60 and 61-88 days post service were 91, 96 and 100%, respectively. The respective values for negative pregnancy prediction were 50, 70 and 80%.

Keywords: Pregnancy diagnosis, ewes, progesterone profile, Ultrasonic

INTRODUCTION

Reliable technique for early pregnancy diagnosis in ewes reduces economic losses due to longer lambing intervals. Non return to estrus has been widely used by farmers as an indication of pregnancy. However, it may be suggestive, as there is no apparent difference between anestrus due to pregnancy and that due to physiological or pathological disorders.

New techniques have been introduced for farm animals during the last two decades. One of these is the use of ultrasonography, due to its applicability under field conditions. It was the objective of this study to detect the accuracy of pregnancy diagnosis in fat tailed ewes by use of ultrasonic technique, non-return to estrus and blood serum progesterone (P₄) level, at early pregnancy.

MATERIALS AND METHODS

The sum of 126 ewes (Finn X Ossimi or Rahmani) were used in this study at Sakha Experimental Farm, Ministry of Agriculture, Egypt. Animals were kept under similar managerial conditions. Animals were bred and heat was detected twice daily (8 AM & 4 PM) using two teasers for 23 days post breeding. Ewes showed estrus were considered as failed to conceive.

Scrum progesterone determinations were carried out on 49 bred ewes, taken at random, during the period from the 12th to the 17th day post breeding to explore the technique in detecting early pregnancy in fat tailed ewes and to detect its accuracy compared with non return to heat.

Blood serum progesterone level was measured using RIA on days 12, 13, 14, 15, 16 & 17 post breeding for pregnancy diagnosis of 49 ewes taken at random. The P₄ profile of pregnant ewes (37 out of 49 ewes) based on non-return to estrus (NR) was studied. The level of 1.0 ng P₄ per ml of blood serum was considered as the discrimination level of P₄ for pregnancy diagnosis according to Mukasa-Mugerwa *et al.* (1990). The Coat-A count progesterone anti serum is a high specific technique for progesterone with a sensitivity of approx. 0.03 ng/ml (intra assay CV, 5.25%; inter assay CV, 9.40%). It has a low reactivity to other steroids. A standard curve ranged from 0 to 60 ng/ml was used.

Ultrasonography was implemented to 114 bred ewes, using A. Scan (HK-pregnancy detector, Rhielintehmid, Germany). Animals were grouped according to NR to estrous and post breeding period to group of 29-45, 46-60 & 61-88 days post breeding, to test the accuracy of the ultrasonic technique as pregnancy advanced. Animals in each group were tested ultrasonically for pregnancy and accuracy of the technique was calculated on basis of those did not return to estrus and lambed.

RESULTS AND DISCUSSION

Serum progesterone level

Out of the 49 ewes, 37 ewes were found pregnant on basis of non-return to estrous. Overall mean of daily progesterone level of the pregnant ewes increased gradually and significantly ($P < 0.01$) from 2.6 ng/ml on day 12, reaching a maximum of 4.2 and 3.5 ng/ml on day 16th and 17th post breeding, which is in accordance with Louise Hare and Bryant (1982). The increase in progesterone is due to CL growth, which is essential for the maintenance of pregnancy.

Accuracy of early pregnancy prediction of ewes on days 15, 16 & 17 post breeding by use of serum P_4 were compared with those proven to be pregnant, predicted by non return to estrus and lambed (Table 1). Results indicate an increase in accuracy as pregnancy advanced. On the other hand, all ewes diagnosed as non-pregnant on any test day, actually failed to conceive.

Table 1. Prediction of early pregnancy in ewes (n=49) by serum progesterone (P_4)¹ and non-return to estrus (NR)

Days Post Breeding	15	16	17
Predicted Pregnant by P_4 :			
No. of ewes ve+	47	45	39
P_4 level (ng/ml)	3.24	4.18	3.37
No. of ewes NR	37	37	37
Accuracy %	78.7 ^a	82.2 ^a	94.9 ^b
Predicted NOT Pregnant by P_4 :			
No. of ewes ve -	2	4	10
P_4 level (ng/ml)	0.23	0.21	0.41
No. of ewes NR	2	4	10
Accuracy %	100	100	100

1. Discrimination level of P_4 was ≥ 1 ng/ml.

a, b; values with different letters, within raw, are significant ($P < 0.05$).

Progesterone level drops sharply (< 1.0 ng/ml) on day 15 in the cyclic ewe but remains elevated (> 1.0 ng/ml) in pregnant ewes as reported by Mukasa-Mugerwa and Viviane (1992). The technique is fairly accurate at early pregnancy but laborious, costly and could be recommended for experimental studies but not routine fieldwork.

Non return %

Average length of estrous cycle in ewes ranges from 15-19 days (Terril, 1974; Quirke, 1978 and Louise Hare and Bryant, 1982). Accordingly, conception based on non return to estrus on day 23 post breeding, as indicated by percentage of animals lambed, in a flock of 126 bred ewes, showed an accuracy of 91.9 % in those predicted pregnant (did not return to estrus). While it was 100% in those returned to estrus (not pregnant).

The technique proved to be practically acceptable provided close observation in presence of good teasers. Non return has been widely used (Ishwar, 1995) to express conception rate.

Ultrasonography

Results (Table 2) showed that accuracy of ultrasonic diagnosis increased progressively and significantly ($P < 0.05$) as stage of pregnancy advanced. Accuracy of positive diagnosis at the respective periods were 90.9, 95.6 and 100%, respectively. Accuracy of negative diagnosis (not pregnant) was markedly lower and increased significantly as pregnancy advanced (50.0, 70.6 and 80.0 %). It seems advisable to use the positive ultrasonic diagnosis rather than the negative estimates, to obtain a relatively accurate and early pregnancy diagnosis (29-45 days post breeding) in ewes.

Table 2. Accuracy of ultrasonic pregnancy diagnosis in ewes (n=114)

Days Post Breeding	No of ewes		% Accuracy
	Ultrasonically examined	Lambled	
Ultrasonically predicted:			
A: Pregnant.			
29-45	11	10	90.9 ^a
46-60	46	44	95.6 ^b
61-88	21	21	100.0 ^c
B: Not Pregnant.			
29-45	14	7	50.0 ^a
46-60	17	12	70.6 ^b
61-88	5	4	80.0 ^c

a, b, c; values with different letters, within column, are significant ($P < 0.05$).

Ultrasonography (A-Scan) seems to be an accurate technique for pregnancy diagnosis in ewes and is applicable under field conditions. Reported studies on A-Scan using advanced stages of pregnancy (60-80 day), showed similar observations to those found in this study. It could be stated that ultrasonic (A-Scan) pregnancy diagnosis at early pregnancy stage (29-45 days post breeding) could be recommended as a safe technique, applicable to routine field work at a relatively high accuracy.

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