

COMPARATIVE EFFICACY OF VARIOUS TECHNIQUES TO DETECT EARLY PREGNANCY IN KENGURI EWES

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ABSTRACT

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A study was carried out in 24 Kenguri ewes which were equally divided into 4 groups belonging to Department of ILFC, Veterinary College, Bidar. These ewes were monitored for oestrous cycle, were bred in oestrous period with natural service, and were subjected for various pregnancy diagnostic techniques from day 24 post breeding. The cervical mucus samples were collected from ewes on days 24, 34 and 44 with sterilized cotton swab using vaginal speculum. First set of smear slides were observed for crystallization pattern under low power objective of phase contrast microscope and second set of slides were subjected to Geimsa staining for vaginal cytological study for early pregnancy diagnosis in Kenguri ewes. The accuracy of pregnancy diagnosis was highest (100%) with non-return rate and cervical swab smear and staining on days 24, 34 and 44 whereas accuracy of transabdominal ultrasonography and Punyakoti test was also 100% on day 44 post breeding in Kenguri ewes. The accuracy of pregnancy diagnosis was 66.67% by Punyakoti test on day 34 and 44 transabdominal ultrasonography on day 34 and 50.00% on day 24 in Kenguri ewes.

Keywords: pregnancy, Kenguri, ultrasonography, Punyakoti test, cytology, non-return rate

Early detection of pregnancy is of considerable economic value in sheep industry. Non-pregnant ewes could be sold, reducing field expenses also marketed at higher prices than they would bring as mature ewes (Gearhart et al., 1988). By considering the available methods of pregnancy diagnosis, present investigation was planned to detect and compare various methods to diagnose early pregnancy (day 24, 34 and 44) by non-return rate, transabdominal ultrasonography, Punyakoti test and cervical swab smear staining.

In Kenguri ewes (24), the estrus was detected by parading rams twice in a day early in the morning and evening hours and was bred

naturally. Pregnancy diagnosis was initiated on days 24, 34 and 44 of post mating using the respective diagnostic methods until the onset of lambing. All the naturally served Kenguri ewes (n=6) were monitored for estrus exhibition using vasectomised rams on day 24, 34 and 44 post breeding and the ewes which did not return to estrus were considered as pregnant. For Punyakoti test, about 15 seeds of wheat were placed in Petri dish containing filter paper with 15 ml diluted urine (1 ml urine +14 ml water) from the ewes whose pregnancy was to be diagnosed. Similarly, a set of Petri dish containing seeds treated with 15 ml water was served as control. After 5 days, the ewe was diagnosed as pregnant if the seeds have

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not germinated and have turned blackish in color. This test was carried out on Kenguri ewes (n=6) at days 24, 34 and 44 after breeding in Kenguri ewes. After fasting for 12 hours, all the ewes (n=6) were scanned transabdominal thrice on days 24, 34 and 44 by using scanner equipped with probe of 3.5 MHz sector probe (SAMSUNG Sync Master E 1720 Logic Book XP). A ewe was designated as pregnant by imaging apparent conceptus (anechoic, elongated structures) within uterine fluid. Accuracy of pregnancy tests was determined by comparing the pregnancy status with lambing. Cervical mucus samples were collected from ewes (n=6) on days 24, 34 and 44 after breeding with sterilized cotton swab and vaginal speculum. The clear cervico-vaginal mucus samples with typical fern pattern from 6 animals were subjected for Geimsa staining and the vaginal mucus samples having slight cloudiness or flakes of pus and samples from post estrus bleeding animals were discarded. The collected mucus was smeared on glass slide and air-dried. The microscopic crystallization pattern for each mucus samples was studied, directly after preparation of smear and evaluated as per the method described by Ghannam and Sorenson (1967). The data obtained from all the techniques of pregnancy diagnosis methods was compared for its efficacy and was confirmed after actual lambing in Kenguri ewes by using descriptive statistical procedure (Miroslav and Lamberson, 2004).

Out of 6 Kenguri ewes subjected for early pregnancy diagnosis using non-return rate, all six ewes did not exhibit estrus on days 24, 34 and 44 and were considered as pregnant (100%). All the six Kenguri ewes (100%) lambled after completion of gestation period. The sensitivity of the non-return rate and positive predictive value was 100% whereas specificity and negative predictive value was 0%. The findings of the present study are in line with the report of Das *et al.* (2011) who stated that, non-return to estrus is still the easiest and cheapest method applicable at field and farm level in sheep.

Out of 6 Kenguri ewes subjected for transabdominal ultrasonography on day 24 post breeding, 3 ewes were confirmed pregnant (50.00%). The sensitivity and positive predictive value was 50.00% whereas the specificity and negative predictive value was 0%. From the initial 3 negative pregnancy diagnoses, were later confirmed pregnant during the next ultrasonography (on days 34 and 44) and actual lambing. The sensitivity was 66.67% on day 34 while 100% on day 44 of gestation length whereas the positive predictive value was 66.67% on day 34 and 100% on day 44 of gestation period respectively. The specificity and negative predictive value was 0% on days 24, 34 and 44 of gestation using ultrasonography. All the ewes that were confirmed pregnant on day 44 post breeding lambled (100%) after completion of gestation length.

The present findings are in agreement with several researchers (Azzarini, 1998) reported that, diagnosis of pregnancy can be made about 90% correctly after 45th day of pregnancy using B-mode real time ultrasonography through transabdominal route in sheep.

Out of 6 Kenguri ewes, 2 ewes were confirmed pregnant by Punyakoti test on days 24 and 34 while 3 ewes were confirmed pregnant on day 44. The sensitivity and positive predictive value was 66.67% on day 24 and 34 while 100% on day 44 post mating. The specificity and negative predictive value was 75% on day 24 and 34 while 100% on day 44 of gestation length. From the initial one negative pregnancy diagnosis that was later confirmed pregnant during the Punyakoti test on day 44 and actual lambing. Out of 6 Kenguri ewes confirmed pregnant on day 44, 3 ewes lambled (50.00%) after completion of gestation length. These values appear to be slightly higher compared to those reported by Swamy *et al.* (2010) and Dilrukshi and Perera (2009) in Malnad Gidda cattle.

In cervical swab smear and Geimsa staining technique, out of 6 Kenguri ewes, 3 were confirmed pregnant (50%) and 3 as non-pregnant (50%) on day 24 as there was typical fern leaf pattern but there was negative fern leaf pattern on days 34 and 44 post breeding. Whereas, in pregnant Kenguri ewes there was negative fern leaf pattern on days 24, 34 and 44 post breeding. Out of 6 Kenguri ewes, 3 were confirmed pregnant (50.00%) and 3 ewes as non-pregnant (50.00%) on day 24 as there were clumps of spermatozoa, anuclear cells, superficial cells, intermediate cells and parabasal cells. As there is paucity of literature in respect of cervical swab and staining in ewes, the present findings of the research work are compared with other animals. The variation in the crystallization pattern of cervical mucus may be due to variation in length of estrus period in non-pregnant and in silent estrus and infections of genital tract, this may be the reason for incorrect diagnosis of pregnancy in cattle (Rebeiro, 2012). Linford, (1974) opined that, the cervical mucus of most species shows cyclical changes in its physical and chemical properties, these changes are under hormonal control.

In conclusion, the accuracy of pregnancy diagnosis was highest (100%) with non-return rate and cervical swab smear and staining on days 24, 34 and 44 whereas accuracy of transabdominal ultrasonography and Punyakoti test was also 100% on day 44 post breeding in Kenguri ewes. The accuracy of pregnancy diagnosis was 66.67% by Punyakoti test on day 34 and 44 trans-abdominal ultrasonography on day 34 and 50.00% on day 24 in Kenguri ewes (Figure 1).

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Fig. 1: Efficacy of various early pregnancy diagnostic techniques in Kenguri ewes

