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Bacteriological studies on the uterine biopsy and conception rate following treatment in repeat breeding crossbred cows

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ABSTRACT

Present study was conducted on 10 normal and 45 repeat breeding crossbred cows. The uteri of normal cows harboured isolates of *E. coli, Staphylococci* and *Streptococci* in 30 percent of the cows. The uteri of 91.12% repeat breeder cows yielded either single or mixed bacterial growth. The organisms isolated were *E. coli* (18.75%), *Corynebacterium* (15.64%), *Bacilli* (14.06%), *Staphylococci* (12.50%), *Pseudomonas* (12.50%), and *Micrococcus* species (3.12%). *In vitro* drug sensitivity of different isolates of bacteria varied greatly between the isolates of different genera. Out of a total of 64 isolates recovered from the uterine biopsies 84.37, 60.93, 67.18, 42.18, 6.25, 20.31, 29.68, 20.31, 38.12, 20.31 and 9.37 percent were found to be sensitive for gentamycin, chloramphenicol, neomycin, oxytetracycline, ampicillin, chlortetracycline, nalidixic acid, erythromycin, streptomycin, cotrimoxazole and furazolidine, respectively. No isolate was found to be sensitive to penicillin. An overall conception rate of 52.9o% was achieved in repeat breeders following treatment. Highest conception rate was recorded in animals treated with gentamycin (72.72%) followed by oxytracycline (62.50%), chloramphenicol (40.00%), streptomycin (40.00%) and nalidixic acid (20.00%).

Keywords : Crossbred, repeat breeding, uterine biopsy, bacteriological studies, conception rate

Microbial infection plays an important role in repeat breeding animals. Pathogenic microorganisms can cause uterine inflammation, denudation of its mucosa and change in its secretion and thus alter uterine environment, resulting into early embryonic death (Singh, 1979 and Dholakia *et al.*, 1987). The treatment of repeat breeding needs proper selection of antibiotics. Indiscriminate and prolonged use of antibiotics may develop drug resistant micro-organisms making further use of such therapy ineffective. Use of antibiotic sensitivity in determining drug of choice for treating infectious repeat breeding can reduce cost of treatment under field condition. In perspective, present investigation was designed to identify the microorganism in the genital tract of repeat breeding crossbred cows and conception rate in affected animals following treatment with specific antibiotics.

MATERIALS AND METHODS

The present study was carried on 55 crossbred cows (10 normal and 45 repeat breeding cows) belonging to the Live Stock Farm, Punjab Agriculture University, Ludhiana and animals brought to the clinics of P.A.U., Ludhiana. The uterine biopsy was collected from all normal and breeding cows as per the method described by Singh (1979). The uterine tissue was kept in 5 ml nutrient broth with the help of sterilized stick swab and incubated at 37°C for 24 hours. The tissue was then streaked on the blood agar plate with the help of sterilized bacteriological loop and incubated at 37°C, for 24 hours and then the plates were examined for the growth of the bacterial colonies. Individual colonies from the plates were picked up and restreaked to purify the culture. Pure cultures were further restreaked on the nutrient blood agar for detailed examination. The identification of the organisms was done as recommended by Carter (1984). The *in vitro* antibiotic sensitivity of all the isolates against antibiotics was carried out as per the technique described by Carter (1973). Serum plate agglutination test was carried out as per the procedure given by Alton *et al.* (1975).

Treatments were carried out during the oestrus period following the bacteriological examination of the uterine biopsy on the basis of in vitro drug sensitivity tests. A uniform treatment regimen was laid down and the animals were treated by intra-uterine infusion with the designated drugs. Chloramphenicol 1 gm, gentamycin 200 mg, nalidixic acid 2 gm, oxytetracycline 1.5 gm and streptomycin 1 gm. The drugs were dissolves in 20 to 30 ml of glass distilled water and were infused on three consecutive days. At the

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Table 1. Conception rate in repeat breeding cows following treatment

Sl. No.	Name of the Drug	No. of animals treated	Conception Rate 1st (%)	2nd (%)	3rd (%)	Overall conception rate (%)
1.	Gentamycin	11	54.54 (6)	40.00 (2)	0 (0)	72.72 (8)
2.	Oxytetracycline	8	50.00 (4)	0 (0)	25 (1)	62.50 (5)
3.	Chloramphenical	5	20.00 (1)	25.00 (1)	0 (0)	40.00 (2)
4.	Streptomycin	5	40.00 (2)	0 (0)	0 (0)	40.00 (2)
5.	Nalidixic acid	5	20.00 (1)	0 (0)	0 (0)	20.00 (1)
	Overall	34	41.17 (14)	15.00 (3)	5.88 (1)	52.96 (18)

Figures in parenthesis indicate number of observations

completion of the treatment, animals were inseminated. If the animals repeated its cycle within 45 days, it was inseminated 2nd and 3rd time. Animals, which did not come in oestrus within 45 days, were examined for pregnancy and conception rate was calculated.

RESULTS AND DISCUSSION

The bacterial isolation of the biopsy material from the uteri of normal cows revealed seventy per cent of the cows were free from bacteria, whereas 30 per cent animals yielded bacterial flora of *Streptococci, Staphylococci* and *E. coli*. Earlier studies contended that pregnancy in cows could continue only in a bacteria free uterus (Fitch and Bishop, 1932). However Zaki *et al.* (1961) and Singh (1979) demonstrated the existence of certain micro-organisms in the healthy genital tract of cows. The present findings are validated from the later observations.

The uteri of 91.12 percent repeat breeder cows yielded either single or mixed bacterial growth. Out of the positive samples, 42.22% and 57.88% samples had one and more than one (mixed) isolates, respectively. The organisms isolated were *E. coli* (18.15%), *Carynebacterium* (15.64%), *Bacilli* (14.06%), *Staphylococci* (12.5%), *Pseudomonas* (15.5%), *Klebsiella* (9.37%), *Proteus* (7.81%), *Streptococci* (6.25%) and *Micrococcus* species (3.12%). These results are in agreement with the findings of Rahman *et al.* (1984).

The antibiotic sensitivity pattern of these bacterial isolates revealed that, out of 64 bacterial isolates recovered from the uterine biopsies, 84.37, 60.93, 67.18, 42.18, 6.25, 20.31, 29.68, 20.31, 28.12, 20.31 and 9.37 percent were found to be sensitive for gentamycin, chloramphenicol, neomycin, tetracycline, ampicillin, chlortetracycline, nalidixic acid, erythromycin, streptomycin, cotrimoxazole and furazolidone, respectively. No isolate was found to be sensitive to penicillin. It was found that the maximum isolates were sensitive to gentamycin, while the sensitivity was minimum for penicillin. Corynebacterium species, which were found to be associated with severe endometritis and an important cause of severe pyogenic infection in bovine (Sagartz and Hardenbrook, 1971) were quite sensitive to gentamycin and chloramphenicol (80.00%). Similar observations were also recorded by Rahman *et al.* (1984), Arora *et al.* (2000) and Rao *et.al.* (2001). Lowest sensitivity to the penicillin in the present study might be due to the more frequent use of penicillin in treating the repeat breeders which might have resulted in developing resistance against penicillin.

Out of 41 repeat breeding cows diagnosed to have uterine infection, 34 were treated with drugs specific to respective infections. Of these 11, 8, 5, 5 and 5 animals were treated with gentamycin, oxytetracycline hydrochloride, chloramphenicol, streptomycin and nalidixic acid, respectively, and of these 8 (72.72%), 5 (60.00%), 2 (40.00%), 2 (40.00%) and 1 (20.00%) animals conceived following treatment and insemination. This rational therepy resulted in a overall conception rate of 52.95% after three inseminations. These results are in agreement with Koleff *et al.* (1973), Sharma *et al.* (1989) and Singh (1994) who have also suggested that the treatment of repeat breeding using in vitro drug sensitivity test of bacterial isolates from uterine biopsy brought about higher recovery rate. All fifty-five cows were screened for brucellosis and three were found to be positive out of which only one could conceive after treatment and insemination.

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