The Indian Journal of Animal Reproduction: 23(2): 148 - 150; December 2002

Microbial profile their antibiogram pattern in cervico-uterine contents and conception rate following treatment in repeat breeder crossbred cows

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Received : November 1, 2001
Accepted : April 20, 2002

ABSTRACT

The overall frequencies of different bacterial isolates identified from uterine fluid of repeat breeding crossbred cows were *Staph. aureus* (29.16%), *E. coli* (20.83%), *C. pyogenes* (16.66%), *Ps. aeruginosa* (16.66%), *Streptococcus* (12.5%), and *Proteus* (4.16%). The antibiotic sensitivity pattern of these bacterial isolates revealed that chloramphenicol (91.6%) was most effective drug followed by gentamicin (70.8%). However, lower sensitivity was evident against oxytetracyclin (37.5%), cephalexin (33.3%) and streptomycin(33.3%) where as ampicillin and penicillin did not show any sensitivity (0.0%). The animals treated based on sensitivity test, with chloramphenicol and gentamicin revealed 80% and 70% conception rate, respectively.

Key words: Antibiogram, cows, microbial profile, repeatbreeding

Non-specific bacterial infection plays a crucial role in repeat breeding animals by causing inflammation of endometrium resulting into early embryonic mortality (Dholakia *et al.*, 1987). The treatment of repeat breeder bovines needs proper selection of antibiotics so as to prevent development of resistant strains of organisms and to eliminate the infection as quickly as possible. The continuous introduction of new antibiotics and their widespread and indiscriminate use emphasizes the importance of *in vitro* testing for specific antibiotic susceptibility. Moreover, recovery rate is faster when specific antibiotic is used for specific type of organisms *in vivo* (Koeleff *et al.*, 1973). In perspective, present study was designed to identify the microflora in genital system of repeat breeder crossbred cows, their antibiotic sensitivity pattern and conception rate in affected animals following treatment with specific antibiotic.

MATERIALS AND METHODS

The present study was carried out in repeat breeder (n=30) and normal fertile (n=10) crossbred cows to identify the involvement of microorganisms in repeat breeding. The normal fertile cows were used as control group. The cervico-uterine mucus was aspirated aseptically using normal saline with the help of sterile A.I. sheath during estrus. The samples were mixed with normal saline and washed at least three times by repeated centrifugation at 4000 RPM for 20 minutes. The sediment was then used for inoculation on laboratory media viz. nutrient agar, blood agar and McConkey's agar. The pathogenic bacteria were isolated and identified as per the standard procedure described by Carter (1984). The *in vitro* antibiotic sensitivity test of all the isolates against seven antibiotics was carried out by disc diffusion technique (Bauer *et al.*, 1996).

The antibiotics to which microorganisms were found to be most sensitive were used for treatment of repeat breeding. The repeat breeder cows (30) were randomly divided in to 3 groups having equal number of cows. The animals in group I were treated with 1 gm chloramphenicol (Neochlor-Vetcare, 10 ml diluted in 20 ml distilled water) through intrauterine route for 3 consecutive cycles. The animals in group II were treated with 400 mg gentamicin (Gentabio-Vetcare) 10 ml diluted in 20 ml distilled water through intrauterine route for 3 consecutive cycles. The animals in group III were kept as untreated control. The animals of all the three groups were artificially inseminated during next estrus up to 3

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consecutive cycles. The conception rate was calculated based on pregnancy diagnosis results carried out between day 50 to 60 post insemination.

RESULTS AND DISCUSSION

The bacteriological examination of mucus samples from normal fertile cows did not reveal presence of any pathogenic bacteria while all the 30 samples from repeat breeder cows were positive for presence of one or more pathogenic bacteria. Out of positive samples, 70% and 30% samples had one and more than one (mixed) isolates , respectively. The over all frequencies of different bacterial isolates were *Staph. aureus* (29.16%). *Esch coli* (20.83%), *C.pyogens* (16.66%), *Ps. aeruginosa* (16.66%), *Streptococcus* (12.5%) and *Proteus* (4.16%). These results are in agreement with the findings of Sharma *et al.*, (1988) and Das *et al.*, (1996) as they isolated 100% positive samples in repeat breeder cows. However, Dholakia *et al.* (1987), Sharda *et al.* (1991), Gupta *et al.*(1997) and Kumar and Attrey (1997) reported 66 to 90% positive samples in repeat breeder cows. The frequency of single or mixed isolates observed in present study is in proximity with the findings of Kumar and Attrey (1997) and Singh *et al.*(1998). On the contrary Das *et al.* (1996) isolated 41.4% single and 58.6% mixed isolates. Highest per cent of *Staph. aureus* among different bacterial species were reported by Singla *et al.* (1993), Gupta *et al.* (1997) and Singh *et al.* (1998) which potentiate the present findings. Similarly, other bacterial isolates are in close proximity with findings of Singla *et al.* (1993), Kumar and Attrey(1997) and Singh *et al.*(1998).

The antibiotic sensitivity pattern of these bacterial isolates revealed that chloramphenicol (91.6%) was most effective drug followed by gentamicin (70.8%). However, lower sensitivity was evident against oxytetracyclin (37.5%), cephalexin (33:3%) and streptomycin(33.3%) where as ampicillin and penicillin did not show any sensitivity (0.0%). These findings are in agreement with the observations reported by Singla *et al.*(1993), Gupta *et al.* (1997) and Seh *et al.* (2000) as they reported that most of the organisms were sensitive to chloramphenicol. However, Singh *et al.* (1998), Arora *et al.* (2000) and Rao *et al.* (2001) reported that gentamicin was the most effective antibiotic *in vitro*. The results also revealed that almost all isolates were least sensitive to penicillin and ampicillin which approximates the findings of Kavani *et al.*(1985), Jacob *et al.* (1995) and Arora *et al.*(2000) which may be attributed to large scale indiscriminate use.

In chloramphenicol treated group 8 animals (80%) conceived while in gentamicin treated group 70% conception rate was recorded up to third insemination as compared to 20% conception rate in untreated control group. The difference between treated and untreated group was highly significant ($P<0.01$). These results are in agreement with Sharma *et al.*(1988) who recorded 80% conception rate with chloramphenicol and with Shukla (1989) who recorded 70% conception rate with gentamicin. However Shukla(1989) and Singla *et al.*(1993) recorded lower conception rate with chloramphenicol while Singh *et al.*(1992) and Singh (1994) observed slightly higher conception rate with gentamicin. The variation in results might be due to difference in the sensitivity pattern of organisms.

From the present study it can be concluded that majority of bacterial isolates recovered from cervico uterine contents of repeat breeder cows were sensitive to chloramphenicol and gentamicin *in vitro* with higher conception rate after treatment.

ACKNOWLEDGEMENT

The authors are thankful to the Dean, college of Veterinary Science and Animal Husbandry, Anjora, Durg (CG) for providing necessary facilities required for carrying out present investigation.

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