

## ANTIBIOTIC SENSITIVITY PATTERN OF UTERINE BACTERIAL FLORA OF REPEAT BREEDER COWS

R. Venugopal, E. Mathai and C.P. Neelakanta Iyer

Department of Animal Reproduction

College of Veterinary and Animal Sciences, Mannuthy, Trichur-680 651.

Infertility in dairy cattle accounts for heavy economic loss to the farmers. Non specific bacterial infection of the reproductive tract is a major cause of infertility in cattle. Many antibiotic preparations and sulpha drugs have been found effective in limiting the uterine infections (Dholakia *et al.*, 1987; Sharda *et al.*, 1991). But selection of suitable antimicrobial agent is essential for effective treatment and prevention of bacterial resistance (Bradner *et al.*, 1986). Hence, a trial on *in vitro* antibiotic sensitivity test as a pre-requisite for the rational use of antimicrobial agent was carried out.

The present work elucidates the antibiotic sensitivity pattern of the bacterial isolates from uterine discharge of repeat breeder cows.

### Materials and Methods

A total of 25 repeat breeder cows suspected to be having non specific uterine infections brought to the Artificial Insemination centre attached to the Department of Animal Reproduction, were selected for the study. The uterine discharge was collected aseptically during oestrus from all selected animals using specially designed intrauterine catheter (Vahida, 1992). The samples were seeded in nutrient broth for growth of organisms. Later the turbidity of the broth was adjusted by broth dilution technique (Barry, 1976) before inoculating to sterile nutrient agar plates. Antibiotic sensitivity test was carried out as per disc diffusion method (Cruickshank *et al.*, 1975). The isolates were tested against Oxytetracyclin (30 mg), Co-trimoxazole (25 mg), Gentamicin (10 mg), Chloramphenicol (30 mg)

and the results were interpreted as per zone size interpretive chart supplied by the manufactures. Grams reaction of the bacterial isolates were also studied.

### Results and Discussion

Uterine mucus samples of 25 repeat breeder cows were utilized for the study. Out of the 25 cases, 72 per cent revealed mixed bacterial infections. Distribution of bacterial isolates revealed Gram positive cocci as predominant (41%) followed by Gram negative rods (29%) and Gram positive rods (17%) Gram negative coccobacilli (8%), and Gram negative cocci (5%) in uterine infections.

The organisms involved in non specific infections are opportunist pathogens which normally inhabit the reproductive tracts of the cows (Arthur *et al.*, 1989).

Antibiogram of bacterial isolates revealed Chloramphenicol to be most effective (72%) followed by Gentamycin (60%) against genital infections. Efficiency of Oxytetracyclin (32%) and Co-trimoxazole (8%) were found to be comparatively low (Table 1). Many published reports on antibiogram of uterine isolates revealed that Chloramphenicol is most effective (Sinha *et al.*, 1977; Venkateswaran and Rajeswar, 1991; Gupta and Deopurkar, 1993 and Mulei and Gitau, 1993). The reduced sensitivity of the isolates to Co-trimoxazole and Oxytetracyclin may be due to the frequent use of these drugs in animals in the locality. Susceptibility to antibiotics varies between any two species of bacteria and strains of

any given species. Some species of microorganisms are inherently resistant to certain antibiotics and resistance may also develop in normally susceptible species due to induction, mutation and transfer of resistance. Incidence of drug resistance is directly proportional to the frequency of use of antibiotics in that area (Wilson and Miles, 1975).

Table 1 Percentage of response in *in vitro* antibiotic sensitivity tests

Name of drug	Number of cases	Sensitive	Inter-mediate	Resistant
Chloramphenicol (30 mg)	25	72	12	16
Gentamycin (10 mg)	25	60	20	20
Oxytetracyclin (30 mg)	25	32	24	44
Co-trimoxazole (25 mg)	25	8	8	84

The present study on sensitivity pattern of uterine bacterial flora showed that Chloramphenicol and Gentamycin are the drugs suitable for treating genital infections under prevailing conditions.

### Summary

An experimental study was undertaken in 25 repeat breeder cows to assess the *in vitro* response of uterine bacterial isolates to different antimicrobial agents for evolving a rational therapy for uterine infections. Out of the four drugs tested, Chloramphenicol gave 72 per cent efficiency followed by Gentamycin, Oxytetracyclin, Co-trimoxazole at 60, 32 and 8 per cent respectively.

### Acknowledgement

The authors are thankful to the Dean, College

of Veterinary and Animal Sciences, Mannuthy for providing necessary facilities to do this experimental study.

### References

- Arthur, G.H., Noakes, D.E. and Pearson, H. (1989). *Veterinary Reproduction and obstetrics* Ed-6 E.L.B.S. London, p. 384.
- Barry, A.L. (1976). *The antimicrobial susceptibility test. Principles and Practices* Lea and Febiger Philadelphia. pp. 72-73.
- Brander, G.C., Pugh, D.M. and Bywater, R.J. (1986). *Veterinary Applied pharmacology and Therapeutics* Ed-4 E.L.B.S. London, pp. 364-366.
- Cruickshank, R., Duguied, J.P., Marmion, B.P. and Swain, R.H. (1975). *Medical Microbiology* Ed-12, Vol.2, Churchill Livingstone, London. pp.195-197.
- Dholakia, P.M., Shah, N.M. Purohit, J.H. and Kher, H.N. (1987). Bacteriological study on non specific genital infections and its antibiotic spectra in repeat breeders. *Indian Vet. J.* **64** (8): 637-640.
- Gupta, A.G. and Deopurkar, R.L. (1993). Microbiological study of gynaecological infections in cattle. *Indian J. Anim. Reprod.* **14**(2): 118-119.
- Mulei, C.M. and Gitau, G.K. (1993). Antibiotic sensitivity of aerobic bacterial organisms isolated from cows with post partum vaginal discharges and their implication in therapy of uterine infections in Kenya. *Indian Vet. J.* **70**: 992-1002.
- Sharda, R., Moghe, M.N. and Tanwwani, S.K. (1991). Antibiotic sensitivity pattern of bacteria isolated from repeat breeding animals. *Indian Vet. J.* **45**: 1014-1022.

Sinha, A.K., Arneja, D.V. and Singh, B.K. (1977). Antibiotic Sensitivity test and treatment of endometritis in cows. *Indian Vet. J.* **54**(7): 538-532.

Vahida, A.M. (1992). Treatment of endometritis for improving fertility in dairy cows. *M.V.Sc. Thesis, Kerala Agricultural University.* pp. 18-19.

Venkateswaran, K.V. and Rajeswar, J.J. (1991). Antibiotic sensitivity pattern of micro organisms causing infertility among cattle in Kanyakumari dist. of Tamil Nadu. *Indian Vet. J.* **68**(2): 187-188

Wilson, G.S. and Miles, A. (1975). *Topley and Wilson's Principles of Bacteriology, Virology and Immunology.* Ed-6. Edward Arnold. London. Vol. 1: pp. 203-209.