The Indian Journal of Animal Reproduction; 27 (1): 69-71; June 2006

Short Communication

Microbiological study of endometritis and its antibiotic spectra in repeat breeder buffaloes*

S.B. PRAJAPATI[1], D.J. GHODASARA[2], K.S. PRAJAPATI[3], J.H. PUROHIT[4] AND V.R. JANI[5]

Department of Veterinary Pathology
College of Veterinary Science and Animal Husbandry, Anand-388001.

Received : April 26, 2004
Accepted : October 3, 2005

ABSTRACT

In the present study, a total of 70 cervico vaginal mucus (CVM) samples comprising 10 samples from healthy buffaloes and 60 samples from clinical cases of endometritis were screened for bacterial isolates. All 10 CVM samples collected from healthy buffaloes did not yield any bacterial culture. CVM samples collected from buffaloes with unhealthy discharge, 54 (90%) CVM samples had bacterial growth comprising 87.04 and 12.96% single and mixed type isolates, respectively. Where as 6 CVM samples did not yield any bacterial culture. The frequency of *Staphylococcus* spp. was found to be maximum followed by *Bacillus* spp., *E.coli*, *Proteus* spp., *Streptococcus* spp., *Pseudomonas* spp. and *Salmonella* spp. The per cent sensitivity of bacterial isolates was found to be maximum for gentamycin followed by chloramphenicol, enrofloxacin, cephalexin, tetracycline, ampicillin, co-trimoxazole and furazolidone.

Key words: Bacteriology, endometritis, repeat breeder, buffalo.

The economic viability of dairy herd is dependent upon normal reproduction in the farm animals. Reproduction may be affected by various factors but the pathological changes in the reproductive tract caused by microorganisms appear to be the main factor for infertility. Beside the presence of specific venereal infection or low grade non-specific genital infections being introduced during natural or artificial breeding or at the time of previous calving may be responsible for unfavorable uterine environment.

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 indiscriminate use of antibiotics has resulted into non-recovery of the animals from genital infections presumably due to development of anti-microbial resistance to the most commonly and widely used broad spectrum antibiotics. This has resulted indirectly into increased cost of treatment and economic losses to the farmers. Therefore isolation and identification of infectious agents is a pre-requisite for adopting suitable therapeutic strategies for earliest recovery from endometritis in cycling buffaloes, hence, it formed the basis for the current investigation.

In the present study, 70 buffaloes (60 buffaloes having clinical endometritis and 10 from normal cycling buffaloes) selected from various co-operative societies of the Panchmahal District Co-Operative Milk Producers' Union Ltd., Godhra. The cervico vaginal mucous (CVM) samples were collected by syringe and pipette method. Cultural isolation and identification of bacterial microorganism up to genera level were carried out as per the method described by Cruickshank *et a.*, (1975) and Buchanan and Gibbon (1974). Antibiotic sensitivity spectrum was carried out as per the method described by Bauer *et al.* (1966). The isolates were tested for their sensitivity with 8 antibiotics using "BIODISCS" viz., Co-trimoxazole (25mcg/disc), Chloramphenicol (30 mcg/disc), Cephalexin (30 mcg/

* Part of M.V.Sc. thesis submitted by the first author to G.A.U., Veterinary College, Anand.

[1] M.V.Sc Student
[2] Assistant Professor,
[3] Professor and Head,
[4] Professor and Head, Department of Veterinary Microbiology.
[5] General Manager, The Panchmahal District Co-Operative Milk Producers' Union Ltd., Godhra.

disc), Gentamycin (10 mcg/disc), Enrofloxacin (10 mcg/disc), Tetracyclin (30 mcg/disc), Furazolodone (50 mcg/disc) and Ampicillin (10 mcg/disc).

A total 70 CVM samples comprising, 10 samples from healthy buffaloes and 60 samples from clinical cases of endometritis were screened for bacterial isolates. All 10 CVM samples collected from buffaloes did not yield any bacterial culture. Out of 60 CVM samples collected from buffaloes with unhealthy discharge, 54 (90%) CVM samples had bacterial growth comprising 87.04 (n=47) and 12.96 (n=07) per cent single and mixed type of bacterial isolates respectively, whereas, 6 (10%) CVM samples did not yield any bacterial culture. The extent of CVM samples found positive for the presence of bacterial isolates in CVM samples in present study corroborated with the observation made by Younis *et al.* (1987) and Walia *et al.*(1999) in buffalo. However the results obtained in present study are comparatively higher than those observed by Verma *et al.* (1997) and Bajaj (2002) in buffaloes. Among the 47 single isolates, frequency of *Staphylococcus* spp. was found to be maximum of 36.17% followed by *Bacillus* spp. (14.89%), *E. coli* (12.76%), *Proteus* spp. (10.64%), *Streptococci* spp. (10.64%), *Pseudomonas* spp. (8.51%) and *Salmonella* spp. (6.38%). The results of present study indicated that *Staphylococcus* spp. seems to be predominant organism causing endometritis in buffaloes. This findings are in agreement with the report of Younis *et al.* (1987) and Bajaj (2002) in buffaloes. However Walia *et al.* (1999) and Verma *et al.*, (1997) observed *Proteus* spp. and *E. coli* respectively as predominant organism for causation of uterine infection in buffalo. Isolation of *Salmonella* spp. from 3 CVM samples in the present study was note worthy. Thanh (1998) and Sood *et al.* (2002) have also isolated *Salmonella* spp. from cervical discharge from buffalo and cow, respectively. Mode of transmission and establishment of the isolated microbes in female genital tract can result from haematogenous route, inhalation or may gain direct entry from the unhygienic surroundings in to the uterus of a post partum buffalo or during oestrus when the cervix is relaxed. Another possibility of uterine infection can be either from natural service or from artificial insemination through frozen semen (Arthur *et al.*, 1986).

The sensitivity per cent of the bacterial isolate of CVM samples having single type isolates were found to be maximum for gentamycin (91.49%) followed by enrofloxacin (87.23%), chloramphenicol (87.23%), cephalexin (74.47%), tetracycline (70.21%), ampicillin (65.96%), co-trimoxazole (38.30%) and furazolidone (42.86%). The mixed bacterial isolates were found to be highly sensitive to gentamycin (100%) followed by chloramphenicol (85.71%), ampicillin (85.71%), tetracycline (85.71%), enrofloxacin (71.43%), cephalexin (57.18%), furazolidone (42.86%) and co-trimoxazole(38.30%).

The results of antibiotic sensitivity test revealed that all the isolates were sensitive to more than one antibiotic and gentamycin was the most effective antibiotic against bacterial isolates from repeat breeder animals. This finding is in accordance with that of Dholakia *et al.* (1987) and Verma *et al.* (1997). All the isolates showed variable sensitivity against gentamycin, cephalexin, chloramphenicol and enrofloxacin. However, *Proteus* spp., *Salmonella* spp. and *Pseudomonas* spp. showed hundred per cent resistance against tetracycline and ampicillin in present study. Sharda *et al.* (1991) reported resistance of *C. pyogenes* and *E. coli* against penicillin, ampicillin, nitrofurantoin and oxytetracycline. This variation in resistance in different studies might be due to use of different antibiotics at various regions and subsequent development of resistance. The present study suggested that in the treatment of genital infections, in combination of 2 or 3 antibiotics preferably gentamycin, chloramphenicol and enrofloxacin should be given. The less sensitivity of furazolidone and co-trimoxazole in the present study is perhaps due to frequent and indiscriminate use of these drugs in the field. Hence it is suggested that antibiotics should be used judiciously preferably after performing antibiotic sensitivity test.

ACKNOWLEDGEMENT

The authors are very much thankful to the Dr R.S. Patel, Managing Director of The Panchmahal District Co-Operative Milk Producers' Union Ltd. Godhra for their permission and facilities provided for research work.

REFERENCES

Arthur, G.H., Noakes, D.E. and Pearson, H. (1989). Veterinary Reproduction and Obstetrics (Theriogenology) 6th Edn. Publ. ELBS and Bailliere Tindall, London.

Bajaj, N. (2002). Effect of herbal medication on endometritis in buffaloes. M.V.Sc. Thesis, Gujarat Agricultural University, Anand.

Bauer, A. W., Kirby, W.M.M., Sherris, J.S. and Turker, M.C.(1966). Antibiotic sensitivity testing by a standardized disc diffusion method. Am. J. Cli. Pathol., **45** : 493-496.

Buchanan, R.E. and Gibbon, N.E. (1974). Beegeys Manual of Determinative Bacteriology, 8th Edn. The Williams and Wilkins Company, Baltimore.

Cruickshank, R., Duguid, J.P. and Swain, R.H.A. (1975). In: Medical microbiology 12th Edn., Churchill Livigstone, London and New York.

Dholakia, P.M., Shah, N.M., Purohit, J.H. and Kher, H.N. (1987). Bacteriological study on non specific infection and its antibiotic spectra in repeat breeders. Indian Vet. J., **64** : 634-640.

Sharda, R., Moghe, M.N. and Tawani, S.K.(1991). Antibiotic pattern of bacterial isolates from repeat breeding animals. Indian Vet. J., **68:** 197.

Sharma, K.C. and Singh, P.K. (2000). Antibiogram of some bacterial isolates from repeat breeder cows. Indian Vet. Med. J., **24:** 125-127.

Sood, P., Verma, S., Mahajan, A., Singh, M., Vashishta, N.K. and Katoch, R.C. (2002). Microbiological profile of genital discharge in cycling endometritic cows of Palam Vally of Himachal Pradesh. Indian J. Anim. Sci., **72:** 251-252.

Thanh, N.V. (1998). Bacteria in the genital tract of normal female buffaloes and of those with metritis in North Vietnam. Khoa Hoc Ky Thrat Thu Y 4 (3): 40-43. (c.f. Vet. Bull. 68:485).

Verma, H.K., Jindal, S.D., Sharma, D.K., Pangaonkar, G.R. and Singh, J. (1997). Etiology and treatment of repeat breeding buffaloes. Indian J. Anim. Sci., **67:** 137-138.

Walia, G.S., Sidhu, S.S., Arora, A.K., Verma, H.K. and Chahal, G.S. (1999). Therapeutic evaluation of antimicrobials in treating endometritis of unbred buffalo heifers. National Symposium of ISSAR on Biotechniques in optimizing fertility in farm animals, 10-12 Feb. 1999, PAU, Ludhiana.

Younis, M., Ashfaque, M. and Ahmad, J. (1987). Low grade infection of uterus in repeat breeding dairy buffaloes. Indian J. Anim. Sci., **57:** 110-113.