



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2018; SP4: 252-253

Vibha Yadav
Department of Veterinary
Microbiology, C.V.Sc &A.H,
Kumarganj, India

RP Diwakar
Department of Veterinary
Microbiology, C.V.Sc &A.H,
Kumarganj, India

Pramod Kumar
Assistant Prof., Department of
Veterinary Physiology &
Biochemistry, C.V.Sc & A.H,
Kumarganj, India

Rajesh Kumar
Assistant Prof. Department of
Veterinary Gynaecology &
Obstetrics., C.V.Sc & A.H,
Kumarganj, India

Pankaj Kumar
Assistant Prof. Department of
Vety. Public Health &
Epidemiology, LUVAS,
Haryana, India

Umed Singh
Department of Animal
husbandry & Dairying, Haryana,
India

Correspondence

RP Diwakar
Department of Veterinary
Microbiology, C.V.Sc &A.H,
Kumarganj, India

(Special Issue- 4)
**International Conference on Food Security and
Sustainable Agriculture**
(Thailand on 21-24 December, 2018)

Antibiogram study of isolated bacteria from repeat breeding cattles in Purvanchal region of Uttar Pradesh

Vibha Yadav, RP Diwakar, Pramod Kumar, Rajesh Kumar, Pankaj Kumar and Umed Singh

Abstract

The samples of cervical mucus of 21 crossbred and 20 Desi cows in and around the NDUAT Campus, Narendranagar, Faizabad (Utter-Pradesh). The isolation of bacteria and in-vitro sensitivity pattern of various drugs against these isolates were carried out. The bacterial isolates comprised of *Staphylococcus spp.*, *Streptococcus spp.*, *Pseudomonas spp.*, *Anthracooids spp.*, *E. coli*, *Corynaebacterium spp.* And some of the untyped Gram positive and Gram negative bacilli and coccobacilli among 14 crossbred and Desi cows with positive infection. Gentamicin was found effective in 92.9 per cent cases. The other drugs followed after Gentamicin in crossbred cows were ampicillin, Kenamycin and tetracycline in 28.6, 21.4 and 14.3 per cent cases respectively, whereas in desi cows other drug found effective were tetracycline, Kenamycin, Chloramphenicol, Streptomycin and ampicillin in 42.9, 42.9, 35.7, 14.3 and 7.1 per cent cases respectively.

Keywords: bacteria, breeding cattles, cervical mucus

Introduction

Mainly buffalo is a triple purpose animal producing milk, meat and draught power. The country has made a grand specter on the World stage being top milk producer and leading meat exporter. The analysis shows that in 2015-16 nearly 36% of the milk production is contributed by Indigenous and 13% by non-descript buffaloes. The total buffalo meat production in 2015-16 was 1611 tones, which is 26% of total meat production in India. The buffalo population in Uttar Pradesh is 30625 thousands and in India it is 108702 thousands according to 19th Livestock Census. This particular livestock species has immense potential for poverty alleviation and rural entrepreneurship. However, just like any other successful agribusiness enterprises, buffalo farming too needs a highly dedicated scientific advisory system for decision making support.

The repeat breeding is the major problem responsible for poor productivity in cattle (Rajesh Kumar, 2008) [6] and buffaloes (M.G. Butani, 2008) [1]. It not only decreases the life time milk production but also increases the cost of milk production. A large number of micro-flora has been isolated from repeat breeder cattle and buffaloes in India. It is necessary to identify the micro-flora from cervical mucus of repeat breeders and to test in-vitro sensitivity pattern of these micro-flora prior to use of any antimicrobial agent in such animals (Rajesh Kumar, 2008) [6].

Materials and Methods

A total of 41 (forty one) repeat breeder cattles in and around the NDUAT Campus, Narendranagar, Faizabad (Utter-Pradesh). These cattles did not show any apparent illness in their reproductive organs but were not conceiving even after artificial insemination as well as natural service. The samples of cervical mucus was collected from these cattles aseptically and were inoculated on various media like blood agar (BA), Mac Conkey's lactose agar (MLA), Nutrient broth (NB) and Nutrient agar (NA) for primary isolation. The inoculated plates were incubated at 37°C for 24 to 48 hours aerobically. The bacterial growth were obtained and tested against many antimicrobial agents for their in-vitro sensitivity and resistant pattern as

per Cruickshank *et al.*, (1975) ^[2].

Results and Discussion

Out of 41 samples analysed for bacterial isolation 14 samples in crossbred (66.7%) and desi (70%) repeat breeder cattles were found positive for bacterial infection. Among animals positive for bacterial infection, 35.7 and 64.3% cases showed single and mixed infection, respectively in crossbred cows whereas 64.3 and 35.7% desi cows showed single and mixed infection respectively. The microorganisms isolated from cervical mucus of crossbred cows included untyped Gram negative bacilli (35.7%) untyped Gram negative coccobacilli (28.6%), *Staphylococcus spp.* And *Pseudomonas spp.* (21.4% each), *E.coli*, untyped Gram positive bacilli, untyped Gram positives coccobacilli (14.3% each) and *Streptococcus spp.*, *Anthrocoides spp.* And *Corynaebacterium spp.* (7.1% each). Untyped Gram negative bacilli and coccobacilli mainly affected the repeat breeder crossbred cows. On the other hand, the microorganisms isolated from cervical mucus of crossbred repeat breeder cows included *Pseudomonas spp.* And *E.coli* (42.9 %) *Anthrocoides spp.* (28.6%) *Staphylococcus spp.* And untyped Gram negative bacilli (14.3% each) and untyped Gram positive and Gram negative coccobacilli (7.1% each). It reveals that *Pseudomonas* and *E.coli* were main source of infection among cross bred repeat breeder cows. Similar isolates were found by many scientists from cervical mucus of repeat breeder cows (Desmukh and Markandiya, 1995 and Singh *et al.*, 1998) ^[3, 8]. However, Rajesh Kumar (2008) ^[6] reported that in repeat breeding crossbred cows 86.67 % cervico-vaginal mucus samples were positive for presence of micro-organisms, moreover, among positive samples incidence of Gram positive, Gram negative and mixed isolates were 38.46%, 46.15% and 15.38% respectively.

The *in-vitro* drug sensitivity results indicated that Gentamicin was found effective in 92.9% cases of both crossbred and desi repeat breeder cows. Singh *et al.*, (1998) ^[8] reported percent sensitivity of Gentamicin whereas, Gupta *et al.*, (1997) ^[4] and Dessmukh and Markandiya, (1995) ^[3] found sensitivity of Gentamicin against the isolates of Cervical mucus of repeat breeder cows as 94.1% and 91.3%, respectively, which is close agreement with the present findings. The other drugs which were found sensitive against the isolates of cervical mucus included Ampicillin (28.6%), Kanamycin (21.4%) and Tetracycline (14.3%) in crossbred cows and Kanamycin and Tetracycline (42.9% each), Chloramphenicol (35.7%), Streptomycin (14.3%) and Ampicillin (7.1%) in crossbred cows. It was observed that Streptomycin and Chloramphenicol were not found effective in any crossbred cow but their sensitivity in 14.3% and 35.7% cases respectively was recorded in crossbred cattle.

The results obtained by sensitivity test indicated that Gentamicin may be considered as drug of choice in for repeat breeder cows. The same results are recommended by Singh *et al.*, (1998), Dessmukh and Markandiya, (1995) ^[3] and Ramaswamy *et al.*, (1991) ^[7]. Wide variation in the sensitivity pattern for antibiotics might be due to difference in the nature of bacteria present in the area, their virulence and resistance developed against antibiotics used indiscriminately (Rajesh Kumar, 2008) ^[6]. Thus, it may further be stated that antibiotic sensitivity testing should periodically be carried out in order to rationalize the treatment against specific microorganism in specific locality.

Acknowledgment

The authors are thankful to the Dean, College of Veterinary

Science & Animal Husbandry, Narendra Deva University of Agriculture & Technology, Kumarganj, Faizabad (U.P) and also thank to Head of the Department of Veterinary Microbiology to providing necessary facility to carry out this research work.

References

1. Butani MG. Studies on major infertility problems, their diagnosis and therapeutic management in buffaloes under field conditions. M. V. Sc. Thesis, Anand Agricultural University, Anand, Gujarat, India, 2008.
2. Cruickshank R, Duguid JP, Marmion BP, Swain RHA. Medical Microbiology. 12th edn. Churchill Livingstone Edinburg London & New York, 1975.
3. Deshmukh VV, Markandiya NM. A study on antibiotic sensitivity pattern of bacterial isolates from repeat breeding cows. Indian J Anim. Sci. 1995; 10:337-338
4. Gupta J, Dabas YPS, Maurya SN, Gupta RS. In-vitro drug sensitivity of bacterial isolates from repeat breeding cows. Indian Vet. Med. J. 1997; 21:124-126
5. Lalvani DD, Bhatia AK, Singh PP, Pathak RC. A study on micro flora of the cervico-vaginal mucus of female genital tract of cows with impaired fertility. Indian Vet. Med. J. 1984; 8:144-147
6. Rajesh Kumar. Studies on major infertility problems, their diagnosis and therapeutic management in crossbred cows under field conditions. M. V. Sc. Thesis, Anand Agricultural University, Anand, Gujarat, India, 2008.
7. Ramaswamy V, Andrew M, Roy P, Chandramohan CP, Venugopalan AT. Aerobic microbes of cervico-vaginal mucus from repeat breeder bovines and their antibiogram. Singapore Vet. J. 1991, 14-15:60-65.
8. Singh M, Sharma M, Pant HC. Bacterial study on cervical mucus of normal cowdness in Himanchal Pradesh. Indian J comp. Microbiol. Immunol. Infect. Dis. 1998; 19:64-65.
9. Singh NP, Chaturvedi VK, Singh DP, Singh PK. Enteric pathogenicity of *Bacillus cereus* from repeat breeding cattle and buffaloes. Indian J comp. Microbiol. Immunol. Infect. Dis. 1997; 18:194-195.