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Therapeutic Management of Mastitis in Cows

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Abstract

Milk sample from 80 dairy cows suspected for mastitis were collected aseptically from April 2000 to March 2010. The samples were subjected to Modified California Mastitis Test (MCMT) and Bromothymol Blue Test (BTB). Out of 80 milk sample positive for mastitis, only 70 were culturally positive. Among the 70 isolates identified, 28 were *Staphylococcus* sp. (40.00%), 20 *Streptococcus* sp. (28.57%), 10 *Escherichia coli* (14.29%), 5 *Klebsiella* sp. (7.14%), 4 *Pseudomonas* sp. (5.71%), 2 *Enterobacter* sp. (2.86%) and 1 *Proteus* sp. (1.43%). *Staphylococcus* sp. were found highly sensitive to gentamicin 27 (96.43%), *Streptococcus* sp. were found to be highly sensitive to gentamicin (90.00%), E. coli was 100% sensitive for gentamicin, enrofloxacin and ciprofloxacin, Klebsiella sp. were 100% sensitivity for ciprofloxacin, enrofloxacin and gentamicin. In *Pseudomonas* sp. 100% sensitivity was also found to ciprofloxacin, enrofloxacin and gentamicin and *Enterobacter* sp. were found to be 100% sensitivity to ciprofloxacin, enrofloxacin and gentamicin. However, all isolates of these organisms were resistant to ampicillin, cloxacillin and penicillin G. The antibiotics such as gentamicin, enrofloxacin, ciprofloxacin and kanamycin may be selected in decreasing order of their efficacy for treating mastitis in bovines.

Key words : Antibiogram, Bovine, Mastitis, Therapy.

Mastitis is a multi-factorial disease and is the single most economically important disease of dairy cattle resulting in the reduction of milk yield and quality, besides occasional deaths. Ineffective treatment in resistant bacterial infection results in profound economic loss, therefore it requires prior antibiotic sensitivity test. The present investigation was undertaken to study the causative organisms associated with bovine mastitis, antibiogram and its therapeutic measures.

Methods

Milk sample from 80 dairy cows suspected for mastitis were collected aseptically from April 2000 to March 2010. The samples were subjected to Modified California Mastitis Test (MCMT) and Bromothymol Blue Test (BTB). The microbial culture was carried out as described by Cowan and Steel (1) and *in-vitro* antibiotic sensitivity tests by disc diffusion technique (2).

Results and Discussion

Out of 80 milk samples positive for mastitis, only 70 were found to be culturally positive. Among the 70 isolates identified, 28 were *Staphylococcus* sp. (40.00%), 20 *Streptococcus* sp. (28.57%), 10 *Escherichia coli* (14.29%) , 5 *Klebsiella* sp. (7.14%), 4 *Pseudomonas* sp. (5.71%), 2 *Enterobacter* sp. (2.86%) and 1 *Proteus* sp. (1.43%). Similar results have been reported by Sahay et al. (3).

In-vitro antibiotic sensitivity test of 28 isolates of *Staphylococcus* sp. were found to be sensitive to gentamicin 27 (96.43%), enrofloxacin 24 (85.71%), ciprofloxacin 20 (71.43%) and kanamycin 18 (64.29%) and rest antibiotics were found to be resistant. *Streptococcus* sp. were found to be highly sensitive to gentamicin (90.00%) and lowest for chloramphenicol (5.00%) and found to be resistant against ampicillin, cloxacillin, penicillin G and oxytetracycline. It was observed that *E. coli* was 100% sensitive for gentamicin, enrofloxacin and ciprofloxacin ; lowest for chloramphenicol (60%) and found to be resistant for ampicillin, cloxacillin and penicillin G. For Klebsiella sp. 100% sensitivity was found for ciprofloxacin, enrofloxacin and gentamicin and lowest for chloramphenicol (20%) and resistant for ampicillin, cloxacillin and penicillin G. In Pseudomonas sp. 100% sensitiv-

Table 1. Antibiotic sensitivity against different isolates. Am = Ampicillin, C = Chloramphenicol, O = Ofloxacin, Ci = Ciprofloxacin, E = Enrofloxacin, K = Kanmycin, CX = Cloxacillin, Er = Erythromycin, P = Penecillin.

Isolates	No. of sample	Am (%)	C (%)	O (%)	Ci (%)	E (%)	G (%)	K (%)	CX (%)	Er (%)	P (%)
Staphylococcus sp.	28	-	-	-	20 (71.43)	24 (85.71)	27 (96.43)	18 (64.29)	-	-	-
Streptococcus sp.	20	-	1 (5)	-	15 (75)	16 (80)	18 (90)	6 (30)	-	2 (30)	-
Escherichia coli	10	-	6 (60)	8 (80)	10 (100)	10 (100)	10 (100)	8 (80)	-	7 (70)	-
Klebsiella sp.	5	-	1 (20)	2 (40)	5 (100)	5 (100	5 (100)	3 (60)	-	2 (40)	-
Pseudomonas sp.	4	-	1 (25)	1 (25)	4 (100)	4 (100)	4 (100)	2 (50)	-	1 (25)	-
Proteus sp.	1	-	-	-	1 (100)	1 (100)	1 (100)	-	-	-	-
Enterobacter sp.	2	-	1 (50)	1 (50)	2 (100)	2 (100)	2 (100)	1 (50)		1 (50)	
Total	70										

ity was also found to ciprofloxacin, enrofloxacin and gentamicin and lowest (25%) for chloramphenicol, oxytetracycline and erythromycin and resistant for ampicillin, cloxacillin and penicillin G. Only one isolate of Proteus sp. was obtained which was found to be 100% sensitivity to ciprofloxacin, enrofloxacin and gentamicin and resistant for others. For Enterobacter sp. 100% sensitivity was found to ciprofloxacin, enrofloxacin and gentamicin and 50% sensitive for chloramphenicol, oxytetracycline, kanamycin and erythromycin and resistant to ampicillin, cloxacillin and penicillin G. Almost similar results were also reported by Vijayalakshmi and Prataban (4) and Sahay et al. (3).

Based on these *in-vitro* sensitivity results, the antibiotics such as gentamicin, enrofloxacin, ciprofloxacin and kanamycin may be selected in decreasing order of their efficacy for treating mastitis in bovines. The variation in the sensitivity may be attributed to the indiscriminate use of these drugs, which contribute to the increased resistant of different bacterial isolates. Therefore, gentamicin, enrofloxacin, ciprofloxacin and kanamycin appeared to have promising results for the therapeutic management of mastitis in this area.

References

1. Cowan S. T. and K. J. Steel. 1993. *Cowan and Steel's Manual for the identification of medical bacteria.* 3rd edition. G. I. Barrow and P. K. A. Feltham (eds). Univ. Press, Cambridge, UK.
2. Bauer A. W., W. M. Kirby, J. C. Sherris and M. Turck. 1966. Antibiotic susceptibility testing by a standardized single dise method. *Am. J. Clin. Path.* 45 : 493—496.
3. Sahay S., B. P. Sinha and S. P. Verma. 2007. Incidence of subclinical mastitis in dairy animals and sensitivity of isolated organisms. *Ind. J. Vet. Med.* 27 : 29—30.
4. Vijayalakshmi P. and S. Prataban. 2007. Antibiotic selection in bovine mastitis. *Ind. J. Vet. Med.* 27 : 49—51.