ISOLATION, IDENTIFICATION AND ANTIBIOTIC SENSITIVITY OF BACTERIAL ISOLATES FROM BOVINE MASTITIS MILK

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ABSTRACT

Milk samples collected aseptically from cows suffering from mastitis were examined for bacterial growth. A total of 30 bacterial isolates comprising *Eschericia coli*, *Staphylococcus aureus, Streptococcus agalactiae, Streptococcus disgalactiae, Streptococcus uberis* and *Pseudomonas aeruginosa* were isolated from the milk samples*. In vitro* antibiogram of these isolates revealed higher sensitivity for Fluoroquinolones (Ciprofloaxacin. Enrofloxacin and Pefloxacin). The results of this study suggested Fluoroquinolones (Ciprofloxacin. Enrofloxacin and Pefloxacin) as the drug of choice for treatment of bovine mastitis.

KEYWORDS: Bovine Mastitis – Bacteria- Antibiogram

INTRODUCTION

Mastitis is one of the most economically important diseases affecting dairy industry. Indiscriminate use of chemotherapeutic agents developed resistance in microbial pathogens. To select a suitable antibiotic, it is always essential to have periodical isolation and identification of bacteria and antibiotic sensitivity studies for better and effective mastitis treatment. Hence an *in vitro* study was undertaken to identify the commonly prevalent bacteria causing mastitis and to select a suitable antibiotic treatment.

MATERIALS AND METHODS

Forty five milk samples collected from mastitis affected cows brought to the Veterinary College Hospital, Namakkal were subjected to this study. Bacterial isolation was done by streaking the samples on 5% Blood agar, Mannitol salt agar, Edward's Media, MacConkey's Media, Cetrimide agar and Potassium tellurite Media and were incubated aerobically at 37^{0}C for 24 to 48 h. The isolates were identified on the basis of cultural, morphological and biochemical characteristics (Barrow and Feltham, 1993). *In vitro* antibiotic sensitivity test of the isolates was conducted on Mueller Hinton agar as per the method of Bauer *et al.* (1966) using 14 antibiotic discs supplied by Ms. Hi-Media Laboratory Mumbai.

RESULTS AND DISCUSSION

In this study a total of 30 bacterial isolates were recovered in pure culture. The spectrum comprised of *Escherichia coli (43.33%), Staphylococcus aureus (16.67%), Streptococcus agalactiae (20%), Streptococcus disgalactiae (6.67%), Streptococcus uberis (6.67%)* and *pseudomonas aeruginosa (6.67%*) in the decreasing order of occurrence. *E. coli* was found to be the major cause of mastitis. *Streptococcus agalactiae* was next to the *E. coli* in causing mastitis.

On the basis of antibiotic sensitivity test. Enrofloxacin was found to be the most effective drug (93.33%), followed by Ciprofloxacin (90.00%), Pefloxacin (90.00%) Oxytetracycline (76.67%), Chloramphenicol (73.33%), Gentamicin (66.67%), Amikacin (53.33%), Streptomycin (46.67%), Triple sulpha (46.67%), Co-trimoxazole, (46.67%), Amoxycillin (30%), Penicillin (26.67%), Ampicillin

(23.33%) and Erythromycin (13.33%).

The highest sensitivity of Fluroquinolones *in vitro* might suggest their minimum use in the treatment of mastitis as a result of which the bacteria has not developed resistance to the drug. Hence it is concluded that Fluoroquinolones (Ciprofloxacin, Enrofloxacin and Pefloxacin) are superior over other antibiotics for the treatment of mastitis in contrast to Gentamicin reported as a drug of choice for the treatment of mastitis by Mandial *et al.* (1999), Bhalerao *et al.* (2000) and Johnson Rajeswar *et al.* (2000). Comparatively lower degree of sensitivity to streptomycin, Triple sulpha, Co-trimoxazole, Amoxycillin, Penicillin and Ampicillin might be due to their prolonged and injudicious use in Veterinary practice under field conditions.

All the *Streptococcus agalactiae, Streptococcus disgalactiae, Staphylococcus aureus* and *Pseudomonas aeruginosa* isolates showed 100% sensitivity to Ciprofloxacin, Enrofloxacin and Pefloxacin in contrast to *E. coli and S. uberis. S. uberis* showed 100% resistance to Ciprofloxacin, Pefloxacin, Gentamicin, Amikacin, Triple sulpha and Co-tramoxazole, but 50% to Enrofloxacin. Oxytetracycline was found to be most effective drug (100%) against mastitis caused by *Streptococcus, agalactiae* besides fluoroquinolones. In this study, 46.67% of the bacterial isolates were found sensitive to Streptomycin.

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