
ANTIBIOGRAM PROFILE OF BACTERIA ASSOCIATED WITH BOVINE ENDOMETRITIS AND MASTITIS IN ANDHRA PRADESH

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ABSTRACT

The present study was taken up with an aim to develop antibiogram profile for bacteria causing endometritis and mastitis in bovines in Andhra Pradesh, which is an essential tool to fight against antimicrobial resistance. For the current study, 30 uterine discharges and 34 mastitis milk from bovines were received from different districts of Andhra Pradesh. From 30 uterine discharges, *Escherichia coli* (47%), *Staphylococcus aureus* (23%), *Klebsiella* Spp (12%), *Proteus* Spp (12%), *Pseudomonas* Spp (6%) were isolated and most of the isolates are sensitive to Gentamicin (10 mcg) followed by Chloramphenicol (30 mcg). And from 34 mastitis milk, *Staphylococcus aureus* (73%), *Escherichia coli* (15%), *Streptococcus* Spp (6%), *Enterococcus* Spp (6%) were isolated and antibiogram shows Amikacin (30 mcg), Chloramphenicol (30 mcg) followed by Enrofloxacin (10 mcg) as most effective antimicrobials.

Keywords: Antibiogram, Endometritis, Invitro Antibiotic Sensitivity Test and Mastitis.

INTRODUCTION

Antibiogram is an overall profile of antimicrobial susceptibility testing results of a specific microorganism to a battery of antimicrobial drugs. Currently attention has to be focused for rational use of antibiotics for treating animals as it has public health importance and it has been estimated that by 2050, 10 million humans deaths annually will be due to antimicrobial resistance (AMR), which is emerging as a major threat to public health and India is said to carry the largest burden of drug-resistant pathogens worldwide. (Rai and Bhat, 2020).

Endometritis and mastitis are causing major economic losses in dairy industry and due to mastitis there is an annual economic loss is over Rs. 6000 crore in India (Ranjan *et al.*, 2010).

Antibiotics are very commonly used for treating endometritis and mastitis at field level and in order to choose an appropriate antibiotic, antibiograms are essential.

MATERIALS AND METHODS

All 30 bovine uterine discharges and 34 mastitis milk received were processed for isolation of pathogen as per Udhyavel *et al.* (2012) and Singh *et al.* (2016) respectively. The bacteria isolated aerobically were identified based on colony morphology, staining and biochemical tests.

Invitro antibiotic sensitivity tests were done for all isolates (Bauer *et al.*, 1966) with 13 antibiotic discs like Gentamicin 10 mcg (GEN 10 mcg), Amoxycylav 30 mcg (AMC 30 mcg), Amikacin 30 mcg (AK 30 mcg), Penicillin G 10 U (P 10 U), Ciprofloxacin 5 mcg (CIP 5 mcg), Enrofloxacin 10 mcg (EX 10 mcg), Oxytetracycline 30 mcg (O 30 mcg), Chloramphenicol 30mcg (C 30 mcg), Neomycin 30 mcg (N 30 mcg), Cefotaxime 30 mcg (CTX 30 mcg), Norfloxacin 10 mcg (NX 10 mcg), Streptomycin 10 mcg (S 10 mcg) and Erythromycin 15 mcg (E 15 mcg) supplied by Himedia, Mumbai.

RESULTS AND DISCUSSION

Thirty uterine discharges has thirty four isolates (due to mixed infections) with *Escherichia coli* (47%), *Staphylococcus aureus* (23%), *Klebsiella Spp* (12%),

Proteus Spp (12%), *Pseudomonas Spp* (6%) as shown in figure 1 and antibiogram of uterine discharges shows Gentamicin (10 mcg) as effective antibiotic followed by Chloramphenicol (30 mcg) and followed by others as shown in figure 3. The results are in agreement with Takamtha *et al.* (2013), whereas Udhyavel *et al.* (2012) also isolated *Escherichia coli* as major pathogen but Ceftriaxone as effective drug. However Manjhi *et al.* (2019) isolated *Staphylococcus Spp* as major pathogen and Ceftriaxone sulbactam as effective antibiotic.

From thirty four mastitis milk, fourty seven isolates (due to mixed infections) were recovered with *Staphylococcus aureus* (73%) as major pathogen followed by *Escherichia coli* (15%), *Streptococcus Spp* (6%), *Enterococcus Spp* (6%) (Fig. 2). Antibiogram of milk samples shows Amikacin (30 mcg), Chloramphenicol (30 mcg) as effective antimicrobials as shown in Figure 4. In this study *Staphylococcus aureus* is the major pathogen for mastitis and the same was also isolated by Singh *et al.* (2016) and Waseem *et al.* (2020). Rajan *et al.* (2010) reported Enrofloxacin as most sensitive antibiotic followed by Ciprofloxacin, Amikacin and this difference in most sensitive antibiotic might be due to variation in strains isolated from a geographical area and prior antibiotic treatment

Fig. 1 - Percentage of isolates from uterine discharges

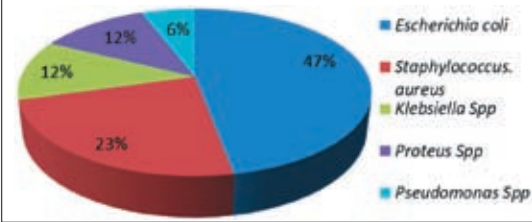


Fig. 2 - Percentage of isolates in mastitis milk

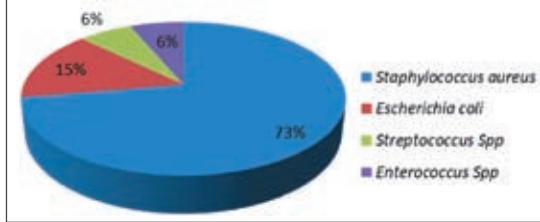


Fig. 3 - Antibiogram for uterine discharge isolates

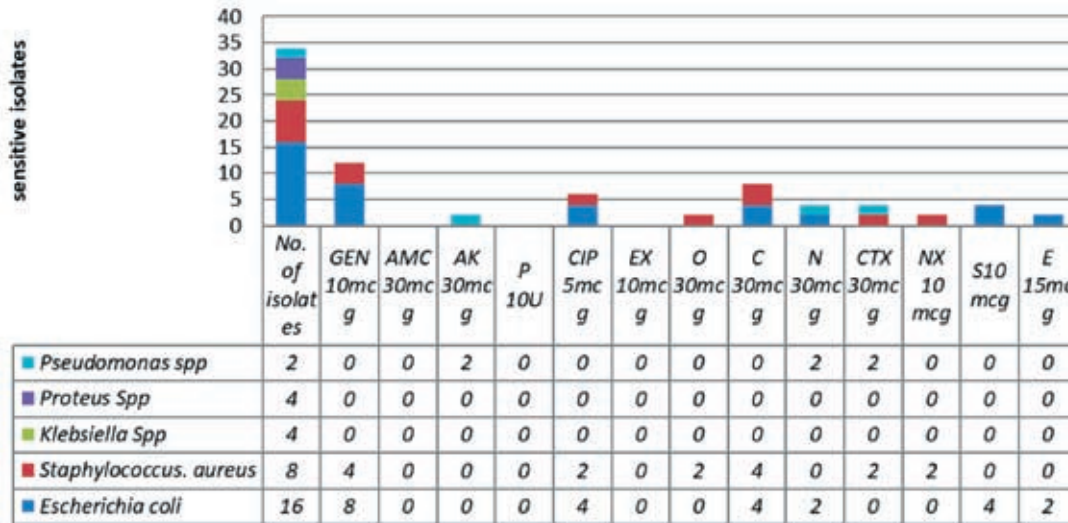
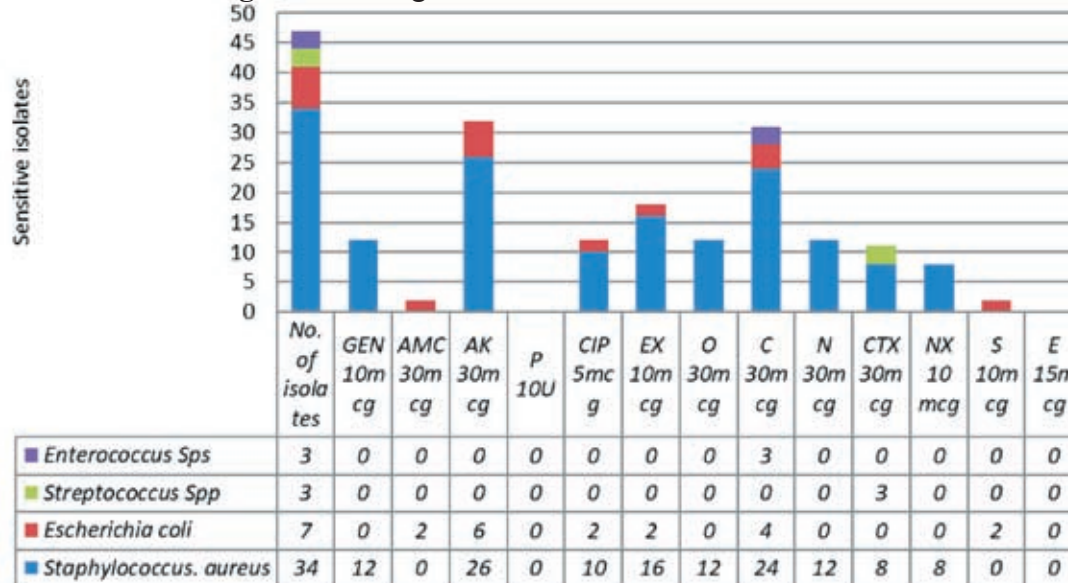


Fig. 4 - Antibiogram for mastitis milk isolates



SUMMARY

This study revealed antibiogram profile of bacteria associated with bovine endometritis in Andhra Pradesh was Gentamicin (10 mcg) and Chloramphenicol (30 mcg) and bovine mastitis was Amikacin (30 mcg) and Chloramphenicol (30 mcg). However there is a need to conduct therapeutic trails with the effective antibiotics at field to check correlation between in vitro and in vivo antibiotic sensitivity.

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