Bacteriological Examination and Antibiogram of Milk Sample of Clinically Infected Dairy Cow Suffering from Mastitis

Subha Ganguly¹, Arpita Padhy², Saraswat Sahoo³, Shyam Lal Garg⁴, Praveen Kumar Praveen⁵, Rajesh Wakchaure⁶

¹Associate Professor & Head, ²Assistant Professor, Department of Veterinary Microbiology, ³Assistant Professor, Department of Veterinary Gynaecology & Obstetrics, ⁴Teaching Associate, Department of Livestock Production Management, ⁵Assistant Professor, Department of Veterinary Public Health & Epidemiology, ⁶Associate Professor, Department of Animal Genetics & Breeding, Arawali Veterinary College, Rajasthan

*Corresponding Author: Email: ganguly38@gmail.com

ABSTRACT

Mastitis is chronic inflammation of the mammary gland of cattle and can have infectious and non-infectious etiologies. It is characterized by physical, chemical, and usually bacteriological changes in the milk and pathological changes in the glandular tissue of the udder and affects quality and quantity of milk. Mastitis is usually caused by bacteria that invade the udder, multiply and produce toxins which are harmful to the mammary gland. It remains the most economically important disease of dairy industries around the world producing great economic loss to farmers. There are two forms of mastitis viz., clinical mastitis (CM) and subclinical mastitis (SCM).

Key Words: Antibiogram, Bacteriological examination, Mastitis, Milk

INTRODUCTION

The indiscriminate uses of antibiotics and irrational treatment of bovine mastitis with different antibiotics have invited serious complications like multiple drug resistance. Till date different types of antibiotics have been tried against the pathogens in bovine mastitis with or without identification and drug sensitivity testing (Patnaik et al., 2013; Paul et al., 2013; Ganguly, 2013). The present study was conducted to identify the etiology of clinical mastitis and the antibiotics/antibacterial drugs which show sensitivity against the various pathogenic agents.

MATERIALS AND METHODS

Milk sample was collected by hand stripping method in a sterile sample collection tube from the affected quarter of the udder of a cross bred cattle exhibiting clinical symptoms of mastitis maintained at the Instructional Livestock Farm Complex (I.L.F.C.) of Arawali Veterinary College. The affected cattle were clinically examined at the Teaching Veterinary Clinical Complex (T.V.C.C.) of the college. The collected milk sample was then produced to the Department of Veterinary Microbiology during November, 2015 for bacteriological examination and reporting.

The milk sample was examined bacteriologically (Buxton and Fraser, 1977) by agar plate culturing and by staining by Gram’s Method followed by antibiotic sensitivity test by Kirby-Bauer antibiotic disc diffusion assay method on Mueller-Hinton agar with certain modifications (Patnaik et al., 2014) using antibiotic discs provided by the supplier (Titan Biotech Ltd., Bhiwadi, Rajasthan, India). The concentration of antibiotic in each filter paper disc was as per the specification of the manufacturer required for laboratory purpose. Incubation of the petridishes layered with the agar containing antibiotic discs was done at 37°C for 24 h in a B.O.D. incubator installed at the department.

RESULTS AND DISCUSSION

The milk sample was subjected to spread plate culture on Nutrient agar media plates. After incubation at 37°C for 24 h it revealed the presence of smooth, raised, mucoid, circular colonies with regular edges. Grams’ method of staining revealed Gram positive cocci shaped organisms arranged in the form of chains when examined under the high power magnification of the compound microscope. The bacteria were bacteriologically determined to be grouped under Streptococcus spp. (Cruickshank et al., 1975; Buxton and Fraser, 1977; Fine gold and Martin, 1982; Ananthanarayan and Paniker, 2009).

Antibiotic assay revealed the bacterial isolates to be highly sensitive to the antibiotics, Ampicillin and Chloramphenicol with low degree of sensitivity to Amoxicillin. The degree of sensitivity was determined on the basis of zone of inhibition formed by the isolated bacteria after exposure to the particular antibiotics.

The results obtained on cultural properties of the bacteria and its antibiotic disc diffusion assay revealed in the present study was in correlation with the findings of Kumar et al. (2010), Patnaiket al. (2014) and Paul et al. (2013).

CONCLUSION

The present study revealed the presence of Streptococcus spp. of bacteria responsible for causing
clinical mastitis in dairy cattle. The bacterial strain was found to be sensitive to broad spectrum antibiotics which was reported and recommended to the T.V.C.C. for their administration in divided doses on alternate daily intervals in mixed preparations.

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