International Journal of Recent Development in Engineering and Technology
Website: www.ijrdet.com (ISSN 2347-6435(Online) Volume 5, Issue 6, June 2016)

Bacteriological Examination of Cow Milk Samples Collected from Case of Chronic Clinical Mastitis

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***Abstract*-- The indiscriminate and injudicious administration of antibiotics and irrational treatment of bovine mastitis with different antibiotics have invited serious complications like multiple drug resistance. The present paper reports the microbiological examination and reporting of a clinical case of mastitis in cow and its recommended therapeutic management with the selected broad spectrum antibiotics. Till date different types of antibiotics have been tried against the pathogens in bovine mastitis with or without identification and drug sensitivity testing.**

***Keywords*-- Antibiotics, Antibiogram, Bacteriology, Mastitis**

I. Introduction

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 and sub clinical forms. Mastitis the chronic inflammation of the mammary gland of cattle and can have infectious and non-infectious etiology. 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. [1-4]

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.

II. Materials And Methods

Four (4 No.) of milk samples were collected by hand stripping method in four separate sterile sample collection plastic capped bottles from all the four (right and left fore and right and left hind sides) affected quarters of the udder of a cross bred cattle exhibiting clinical symptoms of mastitis which was produced at the Teaching Veterinary Clinical Complex (T.V.C.C.) of the college. The collected milk samples were then forwarded to the Department of Veterinary Microbiology during June, 2016 for bacteriological investigation and reporting.

The milk samples were examined bacteriologically [5] for the colony characteristics by nutrient agar plate culturing. Bacterial staining was done by Gram's Method [6]. The antibiotic sensitivity test was performed as per Kirby-Bauer antibiotic disc diffusion assay method on Mueller-Hinton agar plates with certain modifications [1] 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^{o}C for 24 h in a B.O.D. incubator installed at the department.

III. Results And Discussion

The milk samples were subjected to spread plate culture on four separate Nutrient agar media plates [6] from the four samples. After incubation at 37^{o}C for 24 h it showed the presence of smooth, raised, mucoid, circular colonies with regular edges in all the plates. Grams' method of staining revealed Gram positive coccus shaped organisms arranged in the form of chains when examined under the high power magnification of the compound microscope. The bacteria was determined to be grouped under *Streptococcus* spp. [4, 6-8]

Antibiotic assay revealed the bacterial isolates obtained from the culturing of milk specimen from right fore udder quarter to be highly sensitive to the antibiotics, Ceftriaxone and Gentamicin with low degree of sensitivity to Penicillin, left fore udder quarter to be highly sensitive to the antibiotic Tetracycline, right hind udder quarter to be highly sensitive to the antibiotic Chloramphenicol and Amikacin and left hind udder quarter to be highly sensitive to the antibiotic Ceftriaxone respectively. The degree of sensitivity was determined on the basis of the diameter of zone of inhibition formed by the isolated bacteria after exposure to the particular antibiotics by incubation.[9-12, 15]

The results obtained on cultural properties of the bacteria and its antibiotic disc diffusion assays revealed in the present study were in concurrence to the findings of earlier investigators. [10-16]

IV. CONCLUSION

The present study revealed the presence clinical of *Streptococcus* spp. of bacteria responsible for causing clinical mastitis in all the four quarters of the udder of the 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.

Acknowledgements

The authors are thankful to Hon'ble Dean and Management (Hony. Chairman and Secretary, Aastha Society, Sikar) of Arawali Veterinary College, Sikar for providing the necessary facilities to conduct the research work.

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