International Journal of Science, Environment and Technology, Vol. 5, No 1, 2016, 148 – 151

ISSN 2278-3687 (O)
2277-663X (P)

ANTIBIOGRAM OF MILK SAMPLE OF A FARM MAINTAINED DAIRY COW SUFFERING FROM MASTITIS FOLLOWED BY ITS CLINICAL RECOVERY

Subha Ganguly[1]*, Arpita Padhy[2], Saraswat Sahoo[3], Shyam Lal Garg[4], Rajesh Wakchaure[5], Praveen Kumar Praveen[6], Parveez Ahmad Para[7], Tanvi Mahajan[8], Kausar Qadri[9] and Ruchi Sharma[10]

[1]Associate Professor; [2]Assistant Professor, Department of Veterinary Microbiology, [3]Assistant Professor, Department of Veterinary Gynaecology and Obstetrics/ In-charge, Teaching Veterinary Clinical Complex, [4]Teaching Associate, Department of Livestock Production Management/ In-charge, Instructional Livestock Farm Complex, [5]Associate Professor, Department of Animal Genetics and Breeding, [6]Assistant Professor, Department of Veterinary Public Health and Epidemiology,[7]Assistant Professor, Department of Livestock Products Technology, [8]Assistant Professor, Department of Veterinary Anatomy and Histology, [9]Assistant Professor, Department of Veterinary Medicine, [10]Assistant Professor, Department of Veterinary Parasitology, Arawali Veterinary College (Affiliated with Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Pin – 332001, Rajasthan, India
Email: ganguly38@gmail.com (**Corresponding Author*)

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. Till date different types of antibiotics have been tried against the pathogens in bovine mastitis with or without identification and drug sensitivity testing. The present article reports the successful recovery of a clinical case of mastitis in dairy cattle by following the proper dose regimen and schedule of recommended antibiotics for treatment.
Keywords: Antibiotics, Antibiogram, Mastitis, Recovery.

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 [1-3].

*Received Dec 26, 2015 * Published Feb 2, 2016 * www.ijset.net*

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 was clinically examined at the Teaching Veterinary Clinical Complex (T.V.C.C.) of the college. The collected milk sample was then producedto the Department of Veterinary Microbiology during September, 2015 for bacteriological investigation and reporting.

The milk sample was examined bacteriologically [4] for the colony characteristics by nutrient agar plate culturing. Bacterial staining was done by Gram's Method [5]. The antibiotic sensitivity test was performed as per Kirby-Bauerantibiotic disc diffusion assay methodon 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.

RESULTS AND DISCUSSION

The milk sample was subjected to spread plate culture on Nutrient agar media plates (Sinha, 2006. After incubation at 37^{o}C for 24 h it showed the presence of smooth, raised, mucoid, circular colonies with regular edges. 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 bacteriologically determined to be grouped under *Streptococcus* spp. [4, 6-8]

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

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 earlier investigators. [9-12]

CONCLUSION

The present study revealed the presence clinical 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.

After 2 weeks of recommended drug administration it was reported from I.L.F.C. about the successful recovery of the affected udder quarter of the cattle kept under clinical supervision.

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 carry out this research work.

REFERENCES

[1] Patnaik Subhasree, Prasad Arun, Ganguly Subha. Mastitis, an Infection of Cattle Udder: A Review. J. Chem. Biol. Physical Sci. Section-B [Biological Sciences] 2013; 3(4): 2676-8.

[2] Paul I, Isore DP, Joardar SN, Mukhopadhayay SK, Ganguly S, Pal S. Bacteriological investigation and antibiogram on Methicillin-resistant *Staphylococcus aureus* (MRSA) causing subclinical mastitis in dairy cattle population of West Bengal. Indian J. Comp. Microbiol. Immunol. Infect. Dis.2013; 34(2): 56-9.

[3] Ganguly Subha. A comprehensive and illustrious review on clinical and diagnostic aspects of Mastitis infection in high yielding lactating cows. World J. Pharma. Res. 2014; 3(9): 352-60.

[4] Buxton, A. and Fraser, G. 1977. Animal Microbiology. Vol. 1. Blackwell Scientific Publications.

[5] Sinha SN. Focus on College Practical Microbiology. 2006; Part-I. Rita Book Agency, Kolkata, India.

[6] Ananthanarayan R, Paniker CK Jayaram. Textbook of Microbiology. 8thed. Universities Press (India) Pvt. Ltd. Hyderabad, India. 2009; ISBN 978 81 7371 674 4.

[7] Cruickshank R, Duguid JP, Marmion BP, Swain RHA. Medical Microbiology. 1975; 12th ed. Vol. II, Churchill Livingstone, London.

[8] Finegold SM, Martin MJ. Diagnostic Microbiology. 1982; 6th ed. The C.V. Morsby Co., London.

[9] Ganguly Subha, Padhy Arpita, Sahoo Saraswat, Garg Shyam Lal, Praveen Praveen Kumar, Wakchaure Rajesh (2015) Bacteriological examination and antibiogram of milk sample of clinically infected dairy cow suffering from mastitis. Int. J. Medi. Microbiol. Trop. Dis. 1(1): 6-7.

[10] Kumar Mayur, Prasad Arun, Tiwary BK, Ganguly Subha. Study on incidence of mastitis in cattle population of Ranchi (Jharkhand) under different dairy farm conditions. Livest Line.2010; 4(6): pp. 8.

[11] Patnaik Subhasree, Prasad Arun, Ganguly Subha. Biochemical characterization and antibiogram of Staphylococcal microorganisms associated with subclinical mastitis in lactating crossbred cows. Anim. Sci. Rep. 2014; 8(4): 123-9.