

[Home](#) > [Journal](#) > [Biomedical & Life Sciences](#) | [Medicine & Healthcare](#) > [OJVM](#)[Indexing](#) [View Papers](#) [Aims & Scope](#) [Editorial Board](#) [Guideline](#) [Article Processing Charges](#)[OJVM](#) > Vol.2 No.4, December 2012

OPEN ACCESS

Sero-Prevalence of Paratuberculosis (Johne's Disease) in Cattle Population of South-Western Bangalore Using ELISA Kit

PDF (Size: 157KB) PP. 196-200 DOI: 10.4236/ojvm.2012.24031

Author(s)

Anvita Gupta, Sobha M. Rani, Pushpa Agrawal, Praveen Kumar Gupta

ABSTRACT

Johne's disease or paratuberculosis is a chronic mycobacterial infection that affects cattle, sheep, goats and other ruminants, adversely, leading to huge economic losses throughout the world. The estimation of sero-prevalence of this disease in the cattle population of south-western Bangalore, Karnataka, using an immunological assay and statistical analyses, was the objective of this study. One of the diagnostic tools used to detect an antigen or an antibody in animal serum or milk is the Enzyme Linked Immuno-Sorbent Assay, which has been widely used in the research and diagnosis of animal and human diseases as its accuracy is of nanogram-picogram/millilitre level. In the present study, indirect-ELISA was used to diagnose and estimate the sero-prevalence of paratuberculosis in cattle showing diarrhoea and/or anaemia, at 5 local dairy farms in south-west Bangalore, India. Out of 350 bovine serum samples, 53 (15.14%) were positive, 55 milk samples out of 300 were found positive (18.33%) for antibody against Johne's disease by indirect ELISA. The positive samples were then confirmed by direct smear examination of dung by Ziehl-Neelsen staining. Statistical analyses were carried out to indicate the seroprevalence of Johne's disease in the cattle population of this region to be $15 \pm 10\%$, taking a confidence interval of 95%. The results emphasize the need to prevent the further spread of infection to other susceptible animals and humans as the causative organism, *Mycobacterium avium* subsp. *paratuberculosis* is implicated in Crohn's disease, an irritable bowel syndrome in humans.

KEYWORDS

Johne's Disease; *Mycobacterium avium* subsp. *paratuberculosis*; ELISA

Cite this paper

A. Gupta, S. M. Rani, P. Agrawal and P. Kumar Gupta, "Sero-Prevalence of Paratuberculosis (Johne's Disease) in Cattle Population of South-Western Bangalore Using ELISA Kit," *Open Journal of Veterinary Medicine*, Vol. 2 No. 4, 2012, pp. 196-200. doi: 10.4236/ojvm.2012.24031.

References

- [1] J. Muskens, H. W. Barkema, E. Russchen, K. van Maanen, Y. H. Schukken and D. Bakker, " Prevalence and Regional Distribution of Paratuberculosis in Dairy Herds in the Netherlands," *Veterinary Microbiology*, Vol. 77, No. 3-4, 2000, pp. 253-261. doi:10.1016/S0378-1135(00)00310-2
- [2] National Animal Health Monitoring System, Center for Epidemiology and Animal Health, " Johne' s Disease on US Dairy Operations," Fort Collins, Colorado, 1997.
- [3] S. S. Nielsen, S. M. Thamsborg, H. Houe and V. Bitsch, " Bulk-Tank Milk ELISA Antibodies for Estimating the Prevalence of Paratuberculosis in Danish Dairy Herds," *Preventive Veterinary Medicine*, Vol. 44, No. 1-2, 2000, pp. 297-297.
- [4] S. V. Singh, A. V. Singh, R. Singh, S. Sharma, N. Shukla, S. Misra, P. K. Singh, J. S. Sohal, H. Kumar, P. K. Patil, P. Misra and K. S. Sandhu, " Sero-Prevalence of Johne' s Disease in Buffaloes and Cattle Population of North India Using Indigenous ELISA Kit Based on Native *Mycobacterium avium* Subspecies *paratuberculosis* ' Bison Type' Genotype of Goat Origin," *Comparative Immunology, Microbiology and Infectious Diseases*, 31, No. 5, 2000, pp. 419-433. doi:10.1016/j.cimid.2007.06.002
- [5] J. M. Lall, " John' s Disease in Cattle, Sheep and Goats," Issue 19 of I. C. A. R. Research Series,

[OJVM Subscription](#)[Most popular papers in OJVM](#)[About OJVM News](#)[Frequently Asked Questions](#)[Recommend to Peers](#)[Recommend to Library](#)[Contact Us](#)

Downloads: 9,960

Visits: 65,090

[Sponsors >>](#)

- [6] R. J. Chiodini, " Crohn' s Disease and the Mycobacterioses: A Review and Comparison of Two Disease Entities," *Clinical Microbiology Reviews*, Vol. 2, No. 1, 1989, pp. 90-117.
- [7] L. Hasonova and I. Pavlik, " Economic Impact of Paratuberculosis in Dairy Cattle Herds: A Review," *Veterinarni Medicina*, Vol. 51, No. 5, 2006, pp. 193-211.
- [8] J. Hermon-Taylor and F. A. K. El-Zaatari, " The Mycobacterium avium subspecies paratuberculosis (MAP) Problem and Its Relation to the Causation of Crohn' s Disease," *A Guide to Public Health Consequences, Monitoring and Management* IWA Publishing, London, 2004, pp. 74-94.
- [9] RJ Whittington and ESG Sergeant, " Progress towards Understanding the spread, Detection and Control of Mycobacterium avium subsp paratuberculosis in Animal Populations," *Australian Veterinary Journal*, Vol. 79, No. 4, 2001, pp. 267-278. doi:10.1111/j.1751-0813.2001.tb11980.x
- [10] M. I. Barbaruah and A. K. Joseph, " India: Dairy Giant Walking Barefoot," *FAO-RAP Technical Meeting*, 2008, pp. 17-20.
- [11] N. P. Kurade, B. N. Tripathi, K. Rajukumar and N. S. Parihar, " Sequential Development of Histologic Lesions and their Relationship with Bacterial Isolation, Faecal Shedding, and Immune Responses during Progressive Stages of Experimental Infection of Lambs with Mycobacterium avium subsp. paratuberculosis," *Veterinary Pathology*, Vol. 41, No. 3, 2008, pp. 378-387. doi:10.1354/vp.41-4-378
- [12] A. W. Lepper, C. R. Wilks, M. Kotiw, J. T. Whitehead and K. S. Swart, " Sequential Bacteriological Observations in Relation to Cell-Mediated and Humoral Antibody Responses of Cattle Infected with Mycobacterium paratuberculosis and Maintained on Normal or High Iron Intake," *Australian Veterinary Journal*, Vol. 66, No. 2, 1989, pp. 50-55. doi:10.1111/j.1751-0813.1989.tb03015.x
- [13] P. Beard, M. J. Daniels, D. Henderson, A. A. Pirie, K. Rudje, D. Buxton, S. Rhind, A. Greig, M. R. Hutchings, I. McKendrick, K. Stevenson and J. M. Sharp, " Paratuberculosis Infection in Non Ruminant Wildlife in Scotland," *Journal of Clinical Microbiology*, Vol. 39, No. 4, 2001, pp. 1517-1521. doi:10.1128/JCM.39.4.1517-1521.2001
- [14] P. M. Cousens, " Model for Immune Responses to Mycobacterium avium subspecies paratuberculosis in Cattle," *Infection and Immunity*, Vol. 72, No. 6, 2004, pp. 3089-3096. doi:10.1128/IAI.72.6.3089-3096.2004
- [15] Y. Yokomizo, R. S. Merkal and P. A. Lyle, " Enzyme-Linked Immunosorbent Assay for Detection of Bovine Immunoglobulin G1 Antibody to a Protoplasmic Antigen of Mycobacterium paratuberculosis," *American Journal of Veterinary Research*, Vol. 44, No. 11, 1983, pp. 2205-2207.
- [16] L. E. Hardin and J. G. Thorne, " Comparison of Milk with Serum ELISA for the Detection of Paratuberculosis in Dairy Cows," *Journal of the American Veterinary Medical Association*, Vol. 209, No. 1, 1996, pp. 120-122.
- [17] J. R. Stabel, " An Improved Method for the Cultivation of Mycobacterium paratuberculosis from Bovine Fecal Samples and Comparison to Three Other Methods," *Journal of Veterinary Diagnostic Investigation*, Vol. 9, No. 4, 1998, pp. 357-380.
- [18] J. A. VanLeeuwen, G. P. Keefe, R. Tremblay, C. Power and J. J. Wichtel, " Seroprevalence of Infection with Mycobacterium avium subspecies paratuberculosis, Bovine Leukemia Virus, and Bovine Viral Diarrhea Virus in Maritime Canada Dairy Cattle," *Canadian Veterinary Journal*, Vol. 42, No. 3, 2001, pp. 193-198.
- [19] S. W. Martin, A. H. Meek, P. Willeberg, " Principles and Methods," In: Ames, Ed., *Veterinary Epidemiology*, Iowa State University Press, Oxford, 1987.
- [20] W. L. McDonald, S. E. Ridge, A. F. Hope and R. J. Condron, " Evaluation of Diagnostic Tests for Johne' s Disease in Young Cattle," *Australian Veterinary Journal*, Vol. 77, No. 2, 1999, pp. 113-119.