



SHORT COMMUNICATION

First report of Maedi-Visna and Caprine Arthritis- Encephalitis viruses in Krishna district, Andhra Pradesh, India

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ABSTRACT

Maedi-Visna virus (MVV) in sheep and Caprine Arthritis Encephalitis virus (CAEV) in goats, two genetically related diseases caused by small ruminant lenti viruses (SRLVs). These viruses are reported to pose serious economic threats in industrialized countries. The present study reports the epidemiological presence of antibodies by using ELISA test against these viruses in small ruminants in Krishna district of Andhra Pradesh. The seropositivity was recorded as 4.28% against MVV and 4.5% against CAEV with an overall seropositivity of 4.32%.

Keywords: MVV, CAEV, Krishna district, Prevalence

Small ruminant lentiviruses (SRLV) cause two different diseases, namely-Maedi- Visna virus (MVV) of sheep and Caprine arthritis encephalitis virus (CAEV) of goats. MVV and CAEV are caused by a single stranded lentivirus of family *Retroviridae* (Park *et al.* 2010). They are genetically similar, known to cause multisystemic inflammatory disease in small ruminants (Shah *et al.* 2004; Olech *et al.* 2009). Lenti viral infections cause persistent, progressive and debilitating infections in target organs like mammary gland, central nervous system, carpal joints and lungs (Milhau *et al.* 2005). Economic losses in the form of milk production, lameness and interstitial pneumonia are noticed in most of the cases (Grego *et al.* 2005). The term maedi-visna is derived from two Icelandic words: 'maedi' meaning dyspnea and 'visna' meaning wasting, which are the characteristic symptoms observed in the disease (Barquero *et al.* 2011).

The major route of infection of CAEV is via horizontal transmission caused by ingestion of infected milk or colostrum (Logan *et al.* 2004). Transmission by direct

route between goats via urogenital secretions and viral shedding in saliva and feces is also reported. Active viral infection induces a strong, non-protective, humoral and cell mediated immune response (Waseem *et al.* 2015). Sheep and goat contribute 12.71% (65.06 million) and 26.4% (135.17 million) of Indian livestock, respectively. Very few reports are available regarding the epidemiological investigations for the presence of MVV/CAEV in small ruminants of India. The present study was undertaken to assess the seroprevalence in Krishna district of Andhra Pradesh.

A total of 184 serum samples, which included 140 from sheep and 44 from goats, were collected randomly from various flocks located in Krishna district, Andhra Pradesh, India. The analysis of serum antibodies was performed by ELISA using IDEXX CAEV/MVV total antibody test kit, according to manufacturer's instructions and the ODs were read at 450nm with BioTek[®] microplate reader. The results were analysed with xChekPlus[®] software.



It was found that 4.28% (6/140) of sheep and 4.5% (2/44) of goat were found positive for MVV and CAEV, respectively by ELISA with an overall seropositivity of 4.32%. Seroprevalence of MVV observed in this study was lower than the findings of 15.3% (Prezioso *et al.* 2010), 19.4% (Azkur *et al.* 2011) reported in Turkey and 13% (Fournier *et al.* 2006) reported among culled ewes in Alberta, Canada.

Higher seroprevalence of 7.3% in Uttar Pradesh (Singh *et al.* 1997), 7.5% in Turkey (Azkur *et al.* 2011) and 19% in Rajasthan (Singh *et al.* 1997) were reported for CAEV, whereas lower prevalence of 2% (De Groot *et al.* 1993) and 3.33% were reported in Mathura, India (Waseem *et al.* 2015). Variation in results may be due to relatively low number of samples tested and import restriction on goat breeds originating from countries with high seroprevalence of CAEV (Blacklaws *et al.* 2004). CAEV/MVV is responsible for considerable loss of milk and meat among small ruminants (Ding and Xiang, 1997). ELISA and AGID are the standard tests prescribed for international trade by OIE (OIE, 2008). Close antigenic relationship of CAEV with MVV is exploited in reducing the cost of disease diagnosis (Pasick, 1998).

The disease has been reported from various parts of the world (Waseem *et al.* 2015) and is prevalent in most industrialized countries probably due to the practice of feeding lambs with pooled colostrum/ milk, which facilitates the spread of the disease and also because of intensive farming practices (De la Concha-Bermejillo, 1997). Disease is not noticed in indigenous breeds in developing nations unless they come in contact with imported goats (Waseem *et al.* 2015). As there is no cure for these diseases, prophylaxis and correct and rapid identification of these diseases is most important in reducing the economic loss (Cortez-Moreira *et al.* 2005). Control relies on serotesting and segregation, separation of kids after birth and feeding of heat treated milk and colostrum. Infection is persistent despite generation of immune response by host (Aslantas *et al.* 2005). Infected animals are lifelong carriers, even in absence of clinical signs they can transmit the virus via respiratory route or via colostrum/ milk (Prezioso *et al.* 2004). Infected goats are carriers without showing any clinical signs and delayed seroconversions are impediment in control and eradication of this disease (Rimstad *et al.* 1993).

The sero-positivity of the small ruminants for CAEV/MVV warrants the need to conduct exhaustive epidemiological surveys in the state. As the disease is not prevalent in India, the authors suggest to strictly regulate the entry of the disease in to the country by restricting the movement of animals in international trade and by implementing appropriate quarantine and diagnostic methods during imports to prevent the establishment of the disease in India.

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JAR Croatian editorial Board Members from Croatia Visited India to attend 44th DIC, Karnal

Regional Editor of Journal of Animal Research from Croatia Prof Goran Bačić and others Dr. Nino Mačešić and Dr. Lada Radin visited India to present their research in the 44th Dairy Industry Conference held under the theme “Make in India: Dairying 2030”. They were bestowed for the Best Poster Award. They presented research on “Intramammary propolis formulation for prevention and treatment of mastitis in dairy ruminants”, financed from the structural instruments of European Regional Development Fund (ERDF). Their research was recognized by awarding Best Poster Award from the Prof. A.K. Srivastava, Director-cum-Vice Chancellor of NDRI, Karnal.

Their common goal of research is sustainable and profitable farming with maximum respect towards animal’s welfare. They were probably quite surprised by how big the conference was, more than 3000 delegates from different countries and backgrounds which is a great achievement by the organizers. Still, everything functioned perfectly with

many interesting topics being discussed all over the premises of impressive National Dairy Research Institute.

Feedback from Croatian Scientists

In conclusion, we can say that we were amazed by the numbers and aspirations of Indian dairy industry. It’s a great force to be reckoned with and we can honestly say that we are happy to have learned the possibilities that lie ahead of dairy production in India, and cooperation between scientists that can help the advance.

We wish to express our warm gratitude to all of our Indian friends that made our stay in Karnal and India a memorable and a pleasant one. Special thanks to Prof. A.K. Srivastava, Director-cum-Vice Chancellor of NDRI, Prof. T.K. Datta, Scientific Organizing Secretary, Dr. Jeetendra Sharma and Dr. Amit Sindhu for organizing our trip from Karnal to Delhi and stay during the conference.



Prof Goran Bačić, Ph.D., DVM
Dr. Nino Mačešić, Ph.D., DVM
Drf. LadaRadin, Ph.D., DVM

Founder Editor-in-Chief Invited as Speaker for the 44th DIC, NDRI, Karnal



Dr. Neelesh Sharma, Founder Editor-in-Chief, Journal of Animal Research was invited as Speaker for the 44th Dairy Industry Conference, NDRI, Karnal held under the theme Make in India: Dairying 2030. Dr. Sharma, delivered a lecture on “*Major Advances in Our Understanding of Bovine Mastitis: Field, On-Farm and Laboratory Evaluation of the Disease*” in the Session 07 (Improving udder health status, modern vaccines and meeting ‘one health’ standards). Session was chaired by Prof. M.P. Yadav, Secretary, National Academy of Agricultural Sciences (NAAS), New Delhi & Former Vice-Chancellor,

Sardar Vallabh Bhai Patel University of Agriculture & Technology, Meerut; and Prof. V.K. Taneja, Former Vice-Chancellor, GADVASU, Ludhiana. Lecture was appreciated by both Chairman and delegates. There were about 3000 delegates including scientists, researchers and farmers from different countries and backgrounds. Dr Sharma expressed the sincere gratitude to the Prof. A.K. Srivastava, Director-cum-Vice Chancellor of NDRI, Prof. T.K. Datta, Scientific Organizing Secretary, 44th DIC, NDRI, Karnal.