Vol 19 No 1, p 69-71

Short Communication

SEROPREVALENCE OF PPR IN CAMELS IN GUJARAT

H.C. Chauhan, A.I. Dadawala, B.S. Chandel, H.R. Parsani and H.N. Kher
Department of Microbiology, College of Veterinary Science and Animal Husbandry, SD Agricultural University, Sardarkrushinagar-385 506, Gujarat, India

Morbillivirus infections have huge impact on both human beings and animals for centuries. They are highly contagious pathogens that cause some of the most devastating viral diseases of humans and animals worldwide (Murphy *et al,* 1999). One of them is *Peste des petits* ruminants (PPR), which is a highly contagious, viral disease of domestic and wild small ruminants. Presently, PPR occurs in most African countries situated in a wide belt between the Sahara and equator, the Middle East (Arabian Peninsula, Israel, Syria and Jordan) and the Indian subcontinent. Outbreaks of PPR are now known to be common in India, Nepal, Bangladesh, Pakistan and Afghanistan (Abdollahpour *et al,* 2006). In India, PPR was first reported in 1987 from Arasur village in the Villapurum district of Tamil Nadu (Shaila *et al,* 1989). Since its first reported occurrence in 1987, PPR was thought to be restricted to southern part of India up to 1993, after which the epidemics of PPR swept away large number of small ruminants from northern part of India (Nanda *et al,* 1996). Thereafter, the disease has been reported regularly from different parts of the country and is considered as an endemic disease causing a great loss to small ruminants of the country. Goats are more severely affected than sheep. Now the disease has spread all over India. It is still not clear whether the apparent geographical spread of the disease in the last 25 years is real or reflects increased awareness, wider availability of diagnostic tools or even a change in the virulence of the virus. It seems most likely that a combination of factors is responsible for the present knowledge of the disease distribution. It is also known that confusion of PPR with pasteurellosis and other pneumonic diseases of small ruminants has precluded and delayed its recognition in some countries.

Information on the prevalence of antibodies to PPR virus in small ruminants is available from a number of countries in which the disease is reported, including the Sultanate of Oman (Taylor *et al,* 1990), Jordan (Lefevre and Diallo, 1990), Turkey (Ozkul *et al,* 2002) and various African countries (Anderson and McKay, 1994). Reports are also available on detection of PPRV antibodies in cattle, buffaloes and camels (Haque *et al,* 2004; Abraham *et al,* 2005 and Khan *et al,* 2008) in other countries. In India, except seroprevalence report of PPR in cattle in Gujarat (Hinsu *et al,* 2001) and buffaloes in Tamil Nadu (Brindha *et al,* 2007), the pattern of PPRV infection and its seroprevalence in camels has not been studied to date in India. In view of the paucity of information on the prevalence of PPRV infection in animals other than sheep and goats, efforts were made to collect information on the prevalence of antibodies to PPRV in camel population in various parts of Gujarat state.

Materials and Methods

Test samples and c-ELISA kit

In total 150 serum samples were collected randomly from camels belonging to Kutchh and Banaskantha districts of Gujarat state. PPR c-ELISA kit developed at National Morbillivirus Referral Laboratory, Division of Virology, IVRI, Mukteswar was used for detection of PPRV antibodies (Singh *et al,* 2004). c-ELISA was performed strictly as per the protocol outlined in the users manual supplied with the kit. The test plates were read at 492 nm in ELISA plate reader and OD values were determined.

Results and Discussion

Although, the serum samples may not be a true representative of the target population, this information will be very much useful in the development of a PPR control programme using indigenously developed PPRV vaccine. In the present study, a total of 150 serum samples from camels were screened for the presence of PPRV antibodies and of these only 17(11.33%) yielded positive result. Similar to the present findings Abraham *et al* (2005) reported seroprevalence rate of 10% in camels in Ethiopia, whereas, Albayrak and Gur (2009) failed to detect PPRV antibodies in camels in West Anatolia, Turkey.

SEND REPRINT REQUEST TO H.C. CHAUHAN email: dr_hcchauhan@yahoo.co.in

Though PPR is primarily a disease of small ruminants, it has been reported in large ruminants as well (Govindrajan *et al,* 1997). There is enough circumstantial evidence to prove the transmission of virus from small ruminants to cattle and the prevalence of PPRV specific antibodies among bovines (Anderson and McKay, 1994). Similar reports in India were documented by Sudharshana *et al* (1995). PPRV antigen was detected in an outbreak of respiratory disease in camels (Roger *et al,* 2000). Hence, considering the seroprevalence of PPR antibodies in camels, the role of PPRV in the "respiratory disease" can not be ignored in the areas where seroprevalence has been detected in cattle, buffaloes and camels.

Antibody prevalence detected in camels confirmed the natural transmission of PPRV under field condition. Further studies, however, needed to determine if it had any role in the spread of PPR among the small ruminants. Therefore, it was suggested that, within villages where PPR vaccination has been applied in small ruminants, cattle/buffaloes/camels in close contact with sheep and goats could be considered sentinel animals and could be sampled for evidence of seroconversion (Khan *et al,* 2008). Furthermore, as vaccination interferes with the interpretation of all PPR serosurveillance data, every effort should be made to introduce some form of permanent marking for vaccinated sheep and goats (Khan *et al,* 2007).

The results of this study suggests a need for continuous serological and clinical surveillance of PPR in large animals, its effect on small ruminants and the possible role of these species in the transmission cycle of PPRV. The apparent absence of pathogenicity in this animal may have been due to host resistance or loss of virulence of the virus strain as seen by Abraham *et al* (2005) in Ethiopia. The first consequence of these results are that camels could play a role in the epidemiology of PPR in Gujarat and elsewhere in India. Considering the necessary programme for control of PPR in camel population should be integrated in the epidemiological surveys. PPR among large ruminants is of epidemiological significance and will definitely pose a problem, especially, when eradication of PPR is aimed at. The role of camels in the maintenance of the disease in the environment in Gujarat and elsewhere needs to be studied.

References

Abdollahpour G, Raoofi A, Najafi J, Sasani F and Sakhie E (2006). Clinical and para-clinical findings of a recent outbreak of Peste des petits Ruminants in Iran. Journal of Veterinary Medicine - B 53(3):14-16.

Abraham G, Sintayehu A, Libeau G, Albina E, Roger F, Lakemariam Y, Abayneh D and Awoke KM (2005). Antibody seroprevalence against Peste des petits ruminants virus in camels, cattle, goats and sheep in Ethiopia. Preventive Veterinary Medicine 70:51-57.

Albayrak H and Gur S (2009). A serological investigation for Peste des petits ruminants (PPRV) virus infection in sheep, cattle and camels (*Camelus dromedarius*) in Aydin province, West Anatolia. Tropical Animal Health and Production, DOI.10.1007/s11250. 009.9400-1 Published on line 16th July.

Anderson J and McKay JA (1994). The detection of antibodies against Peste des petits ruminants (PPR) virus in cattle, sheep and goats and the possible implications to rinderpest control programmes. Epidemiology and Infection 112:225-31.

Brindha K, Govindrajan G, Ravikumar, Joychandran ND and Kotteswaran A (2007). Seromonitoring of Peste des petits ruminants (PPR) in bovine. Indian Veterinary Journal 84:238-240.

Govindarajan R, Koteeswaran A, Venugopalan AT, Shyam G, Shaguna S, Shaila MS and Ramachandran S (1997). Isolation of Peste des petits ruminants virus from an outbreak in Indian buffalo (*Bubalus bubalis*). Veterinary Record 141:573–574.

Haque ME, Habibs S, Islam MR, Khan KA, Hannan ASMA, Anwar A and Nadir EVA (2004). Seromonitoring of PPRV antibodies in small and large ruminants in Bangladesh. Journal of Animal Veterinary Advance 3(7):453-458.

Hinsu TV, Kher HN, Chandel BS and Jhala MK (2001). Seroprevalence of Peste des petits ruminants (PPR) in Gujarat. Indian Journal of Comparative Microbiology, Immunology and Infectious Diseases 22:81.

Khan HA, Siddique M, Arshad MJ, Khan QM and Rehman SU (2007). Seroprevalence of PPR virus in sheep and goats in Punjab province of Pakistan. Pakistan Veterinary Journal 27:109-112.

Khan HA, Siddique M, Rahman S, Abubaka M and Ashraf M (2008). The detection of antibody against Peste des petits ruminants virus in sheep, goats, cattle and buffaloes. Tropical Animal Health and Production 40:521-527.

Lefevre PC and Diallo A (1990). Peste des petits ruminants virus. Revue Scientifique et Technique / Office International des Épizooties, International Office of Epiz 9:951-965.

Murphy FA, Gibbs EPJ, Horzinek MC and Studdert MJ (1999). Classification and nomenclature of viruses. In: Veterinary Virology, 3rd Edn., Academic Press, New York. pp 4-13.

Nanda YP, Chatterjee AK, Purohit A, Diallo A, Innui K, Libeau, G, Thevasagayam, JA, Bruning A, Kitching RP, Anderson J, Barrett T and Taylor WP (1996). The isolation of *Peste des petits* ruminants virus from northern India. Veterinary Microbiology 51:207-216.

Ozkul A, Akca Y, Alkan F, Barrett T, Karaoglu T, Dagalp, SB, Anderson J, Yesilbag K, Cokcaliskan C, Gencay A and Burgu I (2002). Prevalence, distribution and host range of Peste des petits ruminants virus, Turkey. Emerging Infectious Diseases 8:708-712.

Roger F, Yigezu LM, Hurard C, Libeau G, Mebratu GY, Diallo A and Faye B (2000). Investigations on a new pathological condition of camels in Ethiopia. Journal of Camel Practice and Research 7:163-165.

Shaila MS, Purushothaman V, Bhavasar D, Venugopal K and Venkatesan RA (1989). Peste des petits ruminants of sheep in India. Veterinary Record 125:602.

Singh RP, Sreenivasa BP, Dhar P, Shah LC and Bandyopadhyay SK (2004). Development of a monoclonal antibody based competitive ELISA for detection and titration of antibodies to Peste des petits ruminants (PPR) virus. Veterinary Microbiology 98(1):3-15.

Sudharshana KJ, Rajasekhar M and Upadhyay AS (1995). Prevalence of Peste des petits ruminants and rinderpest antibodies in small ruminants. Indian Veterinary Journal 72(12):1246-1250.

Taylor WP, Busaidy SA and Barrett T (1990). The epidemiology of Peste des petits ruminants in the Sultanate of Oman. Veterinary Microbiology 22(4):341-352.

CAMEL-MILK CHOCOLATE SET FOR SWISS DEBUT

Dubai's Al Nassma, the world's first brand of chocolate made with camels' milk, is set to debut in Switzerland as global demand for the product soars, its general manager said. The confectionary is already available in Japan and Europe, in addition to Gulf states Kuwait and Saudi Arabia, and the company hopes to begin distribution in Egypt.

It will be available in 60 outlets all over Switzerland, in the motherland of chocolate," said general manager Martin Van Almsick.

"People love milk chocolate but they long for something new and we provide that. We provide a new story, a new taste and we are from Dubai and that stirs up some images in the minds of the European customers, as it does the Japanese customers."

(Arabian business.com 16 Aug 2011)

UAE DAIRY PLANS TO LAUNCH CAMEL MILK ICE CREAM

Al Ain Dairy, one of the biggest producers of dairy products in the UAE, is planning to introduce a range of ice creams created from camel milk. It will be the first such product made out of camel milk in the country flavoured by dates, saffron, caramel and chocolate, it was reported on Sunday.

The company will invest AED 10m to redesign its facility for the commercial production of camel milk ice cream, its CEO Abdullah Saif Al Darmaki added in comments published by UAE daily Gulf News.

CAMEL MILK EXPORTS TO EU TO START IN 2013

Camel milk will soon be available in the EU following the announcement. A group of German and Moroccan entrepreneurs have a struck deal to set up a base in the North African state to produce the milk and a range of spin-off products.

Vitamol Camel Dairy and Products has been set up by Germans Malik Dakdaki and Martin Wilke and Moroccan Abdelkader Saoudi and the three partners plan to invest US$ 40m in the project.

The milk, which will be sold under the brand name Vitamol, will be produced in a farm consisting of around 2,200 camels and pulverised and prepared for daily delivery to Europe at a plant set to be built on land in the Tangier Free Zone. The first shipment of camel milk is due to reach European shelves in mid 2013, co-founder Malik Dakdaki told Arabian Business.

AUSSIE ENTREPRENEUR AIMS TO SCRAP CAMEL CULL WITH GULF HELP

A Queensland businessman plans to take on the Australian government in a bid to redirect a multimillion-dollar camel cull into a plan to exporting camel produce to the Gulf.

Outback entrepreneur Paddy McHugh hopes to persuade Australia to capitalise on its wild camel population to create a lucrative business, selling milk and camels into the Gulf region.

"We want to turn it around from a negative and produce an industry for Australia to export meat and milk to the UAE, Saudi Arabia, Qatar and Kuwait. It's got huge potential," he told Arabian Business.

The Australian government plans to spend $19.5m on a cull over the next four years in a bid to control its camel population. The country is home to an estimated one million camels, but the figure is set to double within eight years if left unchecked.