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Seroprevalence of Peste Des Petits ruminants in goats of Assam, India

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Abstract
Paste des petits ruminants is an economically important, acute and highly contagious transboundary viral disease of small ruminants having high morbidity and mortality rate. The present study was conducted to measure the seroprevalence of Peste des petits ruminants in goats of Assam by Competitive-ELISA. A total of 456 serum samples were collected from clinically suspected and apparently health goats from different districts of Assam and PPR viral antibody could be detected in209 samples by c ELISA test (136 from affected goats and 73 from apparently healthy goats) with overall prevalence rate is 45.83% (74.31% affected and 26.73% from apparently healthy goats).From the research findings it could be inferred that PPR is an emerging disease that attributed greater PPRV antibody positivity in clinical samples from goats.

Keywords: Transboundary, C-ELISA, PPR, Assam, Emerging

1. Introduction
Paste des petits ruminants is an economically important, acute and highly contagious transboundary viral disease of small ruminants having high morbidity and mortality rate [1]. The disease is caused by Peste des petits ruminant's virus (PPRV) under the genus morbilli virus in the family of Paramyxoviridae [2] but genetically grouped into four distinct lineages (I, II, III, and IV) based on partial sequence analysis of Fusion (F) gene [3]. The disease was first reported in West Africa in the year 1940 [4]. In India, the disease was first reported for the first time in Arasur village of Tamil Nadu [5]. Since the first record of the occurrence, PPR was thought to be restricted to South India till 1993 [6]. After which the epidemic of PPR swept across a large number of small ruminants to North India [7]. Since then several outbreaks have been recorded in different states of India like Uttar Pradesh [8], Punjab [9], Gujarat [10], Madhya Pradesh [11] and in Assam [12]. Now the disease has become endemic to all over India and is spreading with greater magnitude in every year causing severe economic losses throughout the country.The disease is characterized by pyrexia, ocular and nasal discharges, necrotic stomatitis, catarrhal inflammation of the ocular and nasal mucosa, enteritis, diarrhoea and bronchopneumonia followed by either death or recovery from the disease [11]. Even though the disease has been reported from Assam but the epidemiology of PPR has been fairly studied. The current study was performed to generate the baseline data on sero-epidemiology of PPRV antibody in goats of Assam with an aim to help in the implementation of proper disease control programme.

2. Materials and Methods
2.1 Study area and sample collection
During the present study, 5 ml of blood were collected from clinically suspected cases of PPR in goats during outbreaks of the disease (n=183) and also apparently healthy animals collected randomly from that particular locality and also collected from apparently healthy goats (n=273) from different parts of the Assam where there is no history of PPR outbreaks recorded between 2014 to 2015. Blood samples were collected from jugular vein in vacutainer and were allow clotting by keeping at room temperature for two to three hours. Serum which was usually oozed out within half an hour to two hours was collected by sterile pasture pipette then transferred in to small sterile screw caped plastic vials (1.8ml, Tarsons) labeled properly and stored at -20 ^{o}C without adding any preservatives till further use.

All the collected serum samples were tested for detection of Peste des petits ruminants' viral antibody. The plan of work was approved by Institutional Animal Ethics Committee (IAEC) of College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam, India. IEAC approval No. 770/ac/CPCSEA/FVSc/AAU/IAEC/14-15/261 dated 20/6/2014.

2.2 Serological testing by Competitive- ELISA:
All the collected serum samples were analyzed for the presence of PPRV antibody against the nucleoprotein of PPRV using monoclonal antibody based C-ELISA test kit developed in France (ID Screen PPR competition, Montpeller) following as per protocol given along with the kit. As per protocol of the test the c- ELISA plate was read at 450 nm in ELISA reader (TECAN) and the OD was recorded. The interpretation of the test result was calculated based on competition percentage. The competition percentage= (optical density of test sample/ optical density of negative control X 100). The sample with competition percentage ≤ 30% were considered positive for the presence of PPRV antibodies, greater than 35% (≥35%) and less than 45% (≤ 45%) were considered doubtful and greater than 45% (≥ 45%) were considered as negative.

2.3 Statistical analysis
Prevalence rate was calculated based on the formula. Apparent Prevalence rate= (number of seropositive animals/total number tested X 100). The true seroprevalence rate was calculated by adjusting with apparent prevalence with sensitivity and specificity of the c-ELISA employed in the study, which is having high relative specificity (98.4%) and sensitivity (92.4%) for detection of PPRV antibody in convalescent sera when compared with virus neutralization test as a gold standard.

3. Results and Discussion
All the collected serum samples (n=456) were screened for the presence of PPR viral antibody by using c ELISA kit. Based on the competition percentage, out of all the samples only 209 numbers of samples showed positive for the presence of PPR viral antibody (136 from affected goats and 73 from apparently healthy goats) which indicated percent prevalence of 45.83% (74.31% affected and 26.73% from apparently healthy goats). The details of the c ELISA test are presented in Table 1. The present findings corroborated with the findings of Singh *et al* [6] who recorded 33% of overall seroprevalence of PPR in India by c- ELISA. Chauhan *et al.* [13] also reported an overall prevalence rate of PPR in goats as 46.01% (with a range from 42.30% - 52.94%) and Bhaskar *et al.* [14] reported seroprevalence of PPR in sheep and goats as 62.56% and 65.51% respectively in different district of Maharashtra. Similar findings were also recorded by Sannat *et al.* [15] and Selvaraju *et al.* [16] (2013) with the overall prevalence rate of 46.26% and 39.92% respectively in Tamil Nadu. Present findings were also compared with the findings recorded in other countries like in Bangladesh, where Banik *et al.* [17] recorded 25% ; in Sudan, Saeed *et al.* [18] were recorded 55.5% ; in Iran, Nargesi *et al.* [19] recorded 50%; in Pakistan, Jalees *et al.* [20] recorded 51.5% respectively.

Table 1: Details of the Serum Samples Collected From Affected and Apparently Healthy Goats Screened For PPR Virus Antibody By C Elisa

Sl no.	Name of the Districts	No. of serum samples collected			Positive in c-ELISA Test		
		Affected goats	Apparently healthy goats	Total	Affected goats	Apparently healthy goats	Total
1	Kamrup (M)	123	0	123	98	0	98
2	Dhubri	8	56	64	8	32	40
3	Kamrup (R)	3	55	58	3	29	32
4	Darang	44	11	55	22	2	24
5	Nalbari	0	10	10	0	4	4
6	Barpeta	0	10	10	0	2	2
7	Jorhat	5	25	30	5	0	5
8	Goalpara	0	15	15	0	2	2
9	Karbi Anglong	0	15	15	0	2	2
10	Lakhimpur	0	16	16	0	0	0
11	Dhemaji	0	12	12	0	0	0
12	Bongaigaon	0	17	17	0	0	0
13	Hailakandi	0	10	10	0	0	0
14	Cachar	0	13	13	0	0	0
15	Karimganj	0	8	8	0	0	0
Total		183	273	456	136	73	209
Prevalence percent					74.31%	26.73%	45.83%

4. Conclusion
From the present research findings it could be inferred that PPR is an emerging disease that attributed greater PPR positivity in clinical samples from goats to the facts that most of the suspected samples were from regions which had larger goat population.

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6. Reference
1. Venkataramanan R, Bandyopadhyay SK, Oberoi MS. Present status and strategies for control of transboundary disease and other economically important animal disease in India, Indian Journal of Animal Science. 2005; 75:456-464.
2. Gibbs PJE, Taylor WP, Lawman MP, Bryant J. Classification of the Peste des petits ruminant's virus as the fourth member of the genus Morbillivirus. International Journal of virology. 1979; 11:268-274.
3. Shaila MS, Shamaki D, Forsyth MA, Diallo A, Goatley

L, Kitching RP et al. Geographic distribution of peste des petits ruminants viruses. Veterinary Research. 1996; 43:149-153.
4. Gargadennec L, Lalanne A. La Peste des petits ruminants. Bulletin des Services Zoo Technique des Epizootie de l'Afrique Occidentale Française. 1942; 5:16-21.
5. Shaila MS, Purushothaman V, Bhavasar D, Venugopal K, Venkatesan RA. Peste des petits ruminants in India. Veterinary Research. 1989; 125:602-603.
6. Singh RP, Saravanan P, Sreenivasa BP, Singh RK, Bandyopadhyay SK. Prevalence and distribution of peste des petits ruminants virus infection in small ruminants in India. Review of Science technology off International Des Epizootis. 2004; 23:807-819.
7. Nanda YP, Chatterjee A, Purohit AK, Diallo A, Innui K, Sharma RN et al. The isolation of Peste des petitsruminants virus from northern India. Veterinary Microbiology. 1996; 51:207-216.
8. Tripathi BN, Chhattopadhyaya SK, Parihar NS. Clinicopathological studies on an outbreak of Peste des petitsRuminants in Goat and Sheep. Indian journal of Veterinary Pathology. 1996; 20:99-103.
9. Sharma S, Mahajan V, Kanwar RS, Filia Kumar H, Singh R, Bal MS. Peste des petits ruminants (PPR) outbreaks in sheep and goats in Punjab. Indian journal of Veterinary Pathology. 2007; 31:32-35.
10. Chauhan HC, Lambade PS, Sen A, Dadawala AI, Ranaware PB, Chandel B et al. The use of Pathological and Histopathological techniques in the diagnosis of PPR in India. Veterinaria Italiana. 2011; 47:41-47.
11. Sharma CS, Mehta HK, Prakash MM, Shukla PC. Studies on clinico-Haemato-biochemical changes in Peste des petits ruminants in goats. Veterinary Practitioner. 2012; 13:122-125.
12. Balamurugan V, Hemadri D, Gajendragad MR, Singh RK, Rahman H. Diagnosis and control of peste des petits ruminants: a comprehensive review. Virus diseases. 2014; 25:39-56.
13. Chauhan VV, Digraskar SU, Dhonde SN, Bedarkar SN. Seromonitoring of Peste des petits ruminants (PPR) in goats (*Capra hircus*) of Parbhani region of Maharashtra,Veterinary World. 2009; 2:299-300.
14. Bhaskar SR, Deshmukh VV, Chopade NA, Rautmare SS. Seroprevalence of Peste des petits ruminants in Maharashtra. Indian Journal of Animal Research. 2009; 43:285-287.
15. Sannat C, Chandel BS, Chauhan HC, Dadawala AI. Seroprevalence of PPR in sheep and Goats of North Gujrat. Indian Journal of Small Ruminants. 2011; 17(1):118-121.
16. Selvaraju G, Dinakaran AM, Balasubramaniam GA. Seroepidemiology of PPR in small ruminants of North-West Agro-climatic Zone of Tamil Nadu. Indian Veterinary Journal. 2013; 90(10):09-11.
17. Banik SC, Podder SC, Samad MA, Islam MT. Sero-surveillance and immunization in sheep and goats against Peste des petits ruminants in Bangladesh. Bangladesh Journal of Veterinary Medicine. 2008; 6(2):185-190.
18. Saeed, IK, Ali YH, Melik A, Khalafalla I, Rahman-Mahasin EA. Current situation of Peste des petits ruminants (PPR) in the Sudan. Tropical Animal Health Production. 2010; 42:89-93.
19. Nargesi I, Kolveiri MP, Maghsoudi O. Survey on Peste des petits ruminants in small ruminants. Annals of Biological Research. 2012; 3(10):4842-4844.
20. Jalees MM, Hussain I, Arshad M, Muhammad G, Khan QM, Mahmood MS. Occurrence of Peste des petits ruminants in five districts of Punjab, Pakistan. Pakistan Veterinary Journal 2013; 33(2):165-169.