# SEROEPIDEMIOLOGY OF PPR IN GOATS OF KERALA*

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*Peste des petits ruminants* (PPR) is a severe, fast spreading viral disease of mainly small ruminants caused by *morbilli* virus of *Paramyxoviridae* family. The disease was first reported in India in 1987 (Shaila *et al.*, 1989). Seroprevalence studies showed that PPR has gained establishment in the small ruminants of the country (Singh *et al* ., 2004 a; Sunil Kumar *et al* ., 2005). The present study was undertaken to assess the seroprevalence of PPR in Kerala and to understand various epidemiological factors associated with the disease.

## Materials and Methods

A total of 412 sera samples were collected randomly from goats of different breeds, age groups and managemental practices from all districts of Kerala. Samples were collected from apparently healthy animals and animals with symptoms suggestive of PPR.

Seroprevalence of PPR in goats of Kerala was assessed by Competitive ELISA (c ELISA) using the kit procured from Indian Veterinary Research Institute( IVRI), Mukteswar (Singh *et al.*, 2004b).

The results of prevalence of PPR antibodies in goats were subjected to statistical analysis (Chi square test) as per the procedures of Snedecor and Cochran (1994).

## Results and Discussion

Of the 412 serum samples collected from goats from different districts of Kerala, 64 samples were positive, giving a seroprevalence of 15. 5 per cent. The sero epidemiology of PPR among goats in Kerala is given in Table.

Percentage of seroprevalence was more in animals reared under organised farming than in animals reared under rural farming. In organized farming contact of the animal with infected fodder while grazing or introduction of infection into the farm premises by transport vehicles or unrestricted movement of farm workers or farm visitors might have been the possible sources of infection as suggested by Kumar *et al.* (1999).

Higher percentage of positive reaction among animals with a history of oral lesions, occular lesions, respiratory infection, abortion and diarrhoea suggests the possible association of PPR virus with such conditions or a mild form of the disease. All these symptoms were reported to be present in PPR infections by many workers ( Bundza *et al.*, 1988; Brown *et al.*, 1991). Similar observations were also made by Ozkul *et al.* (2002) in a seroprevalence study conducted in Turkey, where he reported a higher level of seroprevalence in sheep and goats with clinical signs of PPR.

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**Table.** Epidemiological factors associated with seropositivity of PPR in goats

| Seroprevalence with respect | | No. tested | No. of Animals positive | Positive (%) |
|---|---|---|---|---|
| Managemental practice | Organised | 152 | 38 | 25 |
| | Rural | 260 | 26 | 10 |
| Health status | Healthy | 337 | 51 | 15.1 |
| | Diseased | 75 | 13 | 17.3 |
| Breed | Malabari | 134 | 39 | 29.1 |
| | Jamunapari | 30 | 3 | 10 |
| | Cross bred | 248 | 22 | 8.87 |
| Age | 0-6 m | 16 | 0 | 0 |
| | 6m- 1yr | 73 | 22 | 30.1 |
| | 1-3 yr | 281 | 37 | 13.16 |
| | > 3yr | 42 | 5 | 11.9 |
| Sex | Male | 38 | 5 | 13. 15 |
| | Female | 374 | 59 | 15.78 |
| Clinical symptoms | Oral | 41 | 9 | 21.95 |
| | Ocular | 28 | 9 | 32.14 |
| | Diarrhea | 43 | 13 | 32.14 |
| | Abortion | 7 | 3 | 30.2 |
| | Respiratory | 34 | 9 | 26.47 |

The higher percentage of positive reaction among Malabari goats may be because of the higher proportion of younger, more susceptible animals of Malabari breed in the total goat population of Kerala than Jamunapari breed. This is contradictory to the findings of Saha *et al.* (2005) and Kumar *et al.* (2001) who reported a higher prevalence in Jamunapari goats than other breeds probably they might have conducted their study in population where Jamunapari goats may be higher. These contradictory findings in various parts of the country reveal that all the breeds are susceptible if they are virgin to PPR and indicates no breed specificity.

Seroprevalence of PPR was highest in animals of the age group of six months to one year. Similiar finding was also reported by Saha *et al.* (2005) who reported a highest prevalence of the disease in the age group of five to 12 months. Higher susceptibility of kids to PPR infection is attributed to their seronegativity and the concurrent intestinal infections due to coccidia, *E. coli*, entero-viruses and gastro-intestinal parasites which further enhances the susceptibility of younger animals to PPR infections. Kumar *et al.*(2001) observed a lower sero prevalence in adults because according to him adult goats were less susceptible to PPR due to strong and developed immune system in adults. In contradictory to this findings, Agrawal *et al.* (2006) recorded a highest seroprevalence among goats of three to five years age. Absence of seroprevalence in goats below 6 months of age may be due to the presence of colostral antibodies in the kids (Saha *et al.*, 2005; Agrawal *et al.*, 2006).As the disease is an emerging one Kerala and the lack of regular immunization the chances of seronegativity is also more in goats of all age groups. All these findings show that age is not a factor which decides the outbreak of PPR.

Even though a higher seroprevalence was observed in females when compared to males no significant difference was observed statistically. This is in agreement with the studies of Agrawal *et al.* ( 2006), where sex wise seroprevalence revealed a higher prevalence among females than males. He also suggested that it may be attributed to the variation in sample size, more over the males are sold at a much earlier age while females are kept for breeding and milch purpose and there by the chances of the disease in females may be more . These findings are in contrary to the observation by Shankar *et al.* (1998) who reported a higher attack rate and case fatality rate in males (66. 6 per cent) than in females (39. 6 per cent). These finding shows that both sexes are susceptible provided they are seronegative to PPR.

Highest seropositivity to PPR was observed in samples collected from animals having abortion. Bundza *et al.* (1988) associated symptoms of abortion with PPR.

A higher rate of seroprevalence was observed in this study when compared to previous report by Sunil Kumar *et al.* (2005).The present study warns that PPR has already established in our goat population and warrants necessary prophylactic measures as a regular routine programme.

## Summary

Of the 412 serum samples collected from goats from different districts of Kerala, 64 samples were positive giving a seroprevalence of 15. 5 per cent. Seroprevalence of PPR was more in animals reared under organized farming system than in rural farming system. Animals with a history of disease showed more sero-prevalence to PPR. Seropositivity of PPR was more in Malabari breed of goats. Seroprevalence of PPR was more in animals of the age group of 6 months-one year. Female animals showed a higher seropositivity than male animals. High percentage of seroprevalence of PPR was detected in animals with a history of abortion.

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