

*Article*

**A study on prevalence and therapeutic assessment of Peste des Petits Ruminants in goat at Upazilla Veterinary Hospital Babugonj in Barishal District of Bangladesh**

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**Abstract:** A study was conducted at Babugonj upazilla under the district of Barishal in Bangladesh during the period from 1<sup>st</sup> December, 2020 to 29th April, 2021. To determine the prevalence and therapeutic efficiency of Peste des Petits Ruminants in goat. A total number of 523 diseases cases were recorded randomly irrespective of age, sex, and breed over the study period, among them 118 case were clinically diagnosed as Peste des Petits Ruminants. The overall prevalence of Peste des Petits Ruminants in goat was 22.56%. Diarrhoea, dyspnea, oculonasal discharge, rough hair coat, dullness, depression, and erosion on the lip were the common findings during clinical examination of Peste des Petits Ruminants patients. The prevalence of Peste des Petits Ruminants in different age group upto 4 month, 5-8 month, 9-12 month, Above 12 month were 11.02%, 31.36%, 33.90% and 23.73% respectively. Female are more susceptible (76.27%) than male (23.72%). Black bengal goats were more susceptible (69.49%) than Jamunapari (30.50%). Peste des Petits Ruminants causes higher mortality and heavy economic losses in every year which may be reduced substantially by proper vaccination and other management approaches.

**Keyword:** Peste des Petits Ruminants; prevalence; goat

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## **1. Introduction**

Goat rearing is an integral part of farming system in Bangladesh. About 22% of the populations of Bangladesh earn their livelihood through work associated with raising livestock. Goat rearing provides a significant level of supplying animal protein in the form of meat, and one of the important areas of earning foreign exchange through the exportation of skin. Goat is called "The cow of poor people" in Bangladesh; the rears 21.55 million goats are reared in rural and urban areas of Bangladesh (FAO, 2013). Currently Bangladesh government has taken a national scheme of poverty alleviation through goat rearing. The goat is particularly useful for low income farmers, landless laborer and distressed women who cannot afford to rear cattle.

However different types of infectious diseases (PPR, Pneumonia, Goat pox, Enterotoxaemia, Mastitis, Tuberculosis, Tetanus, Papillomatosis, Ringworm, etc) and non-infectious disease (ketosis, Pregnancy toxaemia and vaginal prolapsed etc) are important problems to raise and rear the goat population in this country. PPR is an acute, highly contagious viral disease of sheep, goats, and wild ruminants that is endemic in several countries in Africa, the Arabian Peninsula, Middle East and India. The virus is antigenically related to Rinderpest virus which infects cattle and other large animal (Barrett, 1994).

Sheep and goats are the natural host of PPR virus where as goats are more susceptible than sheep (Radostits *et al.*, 2005). PPR is one of the top ten diseases in sheep and goats that are having a high economic impact on the poor rural small ruminant farmers. Though PPR is immunologically similar to rinderpests in the early days the rinderpest vaccine has been used to protect PPR. Now a day's tissue culture vaccine is widely used to protect PPR disease. It produces strong immunity against PPR (OIE, 2002).

PPR is a one of the economic important disease in small ruminants of Bangladesh. Present study was under taken with a view to fulfill the following objectives-

- i. To know the overall prevalence of PPR in goat at study area.
- ii. To estimate the proportional prevalence of PPR of goat in relation to breed, age, sex.
- iii. To evaluate symptomatic treatment for PPR affected goats.

## 2. Material and Methods

### 2.1. Study area and duration

The present study was carried out at Upazilla Veterinary Hospital Babugonj, Barishal of Bangladesh. Surrounding regions have a tropical wet and dry climate, with a maximum and minimum temperature of 39°C and 5°C respectively. The period of study was about 22 weeks, starting from 1<sup>st</sup> Dec, 2020 to 30<sup>th</sup> April, 2021.

### 2.2. Study population

The study was conducted on naturally PPR suspected goat brought to the veterinary hospital during the study period. A total number of 118 disease cases were recorded during the study period. Sample were selected randomly irrespective of age, sex, and breed over the study period.

### 2.3. Data collection

The data were directly collected from the owner and Upazilla Veterinary Hospital. Data were based on, client/owners complains, anamnesis of patient (goat), clinical history, physical examination data (inspection, temperature, auscultation, respiration) and clinical sign of suspected goats. History of the cases were taken carefully from the owner based the following aspect (age, sex, breed, vaccination, duration of rearing, housing, previous disease history etc.).

### 2.4. Clinical sign and examination

The following clinical examination were done carefully and the findings were recorded- Temperature were recorded by indirect palpation per rectum by thermometer of every case and tabulate (104-107°F). Erosion of oral mucosa, respiratory distress, discharge from eyes, nose, mouth, rough coat, soiled hindquarter. Skin fold test were performed to take the rough estimation of the degree of dehydration. Indirect auscultation was performed to hear the lung and tracheal sound to coincide with the symptoms of pneumonia.

### 2.5. Diagnosis of PPR

Among all diseased cases of goat brought to the veterinary hospitals for treatment, presumptive diagnosis of PPR in goat were made on the basis of owners complains, clinical history, clinical signs.

### 2.6. Statistical analysis

The prevalence of parasitic infestation was calculated by considering total number of samples screened for parasite and number of samples detected positive as per formula. Prevalence of parasite (%) = Number of positive cases/Total number of screened sample x 100. Data also analyzed by Chi-square test to observe the significant influence of parameters.

## 3. Results and Discussion

### 3.1. Prevalence of PPR in goat

The prevalence of PPR in goat and therapy used to control also taken into consideration for determining the therapeutic efficacy of PPR infected goat in Babugonj upazilla to observe in this study. The prevalence of PPR in goat at study area was 22.56% shown in Table 1. Different researchers recorded a lot of findings. Khan and Siddique *et al.* (2007) reported that the overall prevalence of PPRV was 43.33% of the ruminant population in Punjab. They also mentioned the overall PPR antibody seroprevalence in goats was 39.02%, which is significantly higher. These variations might be due to differences in geo-climatic conditions, grazing pattern, rearing and husbandry measures and genetic resistance of the breed.

### 3.2. Prevalence of PPR affected according to breed

A total of 118 goats were found affected with PPR in which prevalence of PPR in Black Bengal goats as 69.49% and Jamunapari 30.50% as shown in Table 2. Samad (2000) showed that Black Bengal breeds were more prone (67.24%) to PPR than Jamunapari (32.76%), which was in support to the reported data.

### 3.3. Prevalence of PPR affected according to age

The prevalence of PPR was maximum 33.90% at age of 9-12 months, in compare with 11.02%, 31.36%, 23.73% at age category > 4 month, 5-8 month, < 12 month respectively as shown in Table 3. It was agreed with the study of Blood *et al.*, 1995; Singh *et al.*, 2004 and Ahmad *et al.*, 2005 where prevalence was maximum within 7-12 months age. Sarkar and Islam (2011) reported the highest PPR prevalence in young animals reasoning the poor immunity and poor nutrition as responsible factors for the disease prevalence. It was previously reported that the goats age between 4 to 12 months were more prone to PPR than older (above 12 month) Gupta *et al.* (2007).

### 3.4. The prevalence of PPR affected according to sex

The variable sex of goat, females (76.27%) were more susceptible than male (23.72%) to PPR disease as shown in Table 4. These results were not agreement with the results of Sarker and Islam (2011) who stated that males are mostly affected by PPR and this might be due to genetic variation of the animals.

### 3.5. Efficacy of therapeutic response of PPR in goats at different therapeutic methods

As shown in Table 5, the treatment and therapeutic responses were studied. This data showed that treatment with Gentasone plus and pheneramine melete cured was 82.85% PPR affected goat as compared with Oxytetracycline and Sulphonamide treated goats 72.91%. Islam *et al.* (2003) reported that PPR was treated with antibiotic and antihistaminic drugs and found successful rate. Banyard *et al.* (2010) found that antibiotic with fluid therapies cured PPR as 62.5%. Symptomatic treatment with board spectrum antibiotic (oxytetracycline) can save life of sick animal by Sil (2000).

**Table 1. The prevalence of PPR in goat.**

Total no. of goats	No. of infected goat	Prevalence
523	118	22.56%

**Table 2. The prevalence of PPR in different breeds of goat.**

Name of Breed	No. of infected animals	Prevalence
Black Bengal	82	69.49%
Jamunapari	36	30.50%

**Table 3. The prevalence of PPR in different ages of goat.**

Age	No. of infected animals	Prevalence
> 4 month	13	11.02%
5-8 month	37	31.36%
9- 12 month	40	33.90%
< 12 month	28	23.73%

**Table 4. The prevalence of PPR in different sex of goat.**

Sex	No. of affected animals	Prevalence
Female	90	76.27%
Male	28	23.72%

**Table 5. Efficacy of therapeutic response of PPR in goats at different therapeutic drugs.**

Therapy	Total no. of animal treated	No. of cured animal	Prevalence of cured animal
Inj. Gentasone plus+ Inj pheneramine meleate + Fluid and electrolyte therapy	70	58	82.85%
Sulphonamide bolus+ Inj. Oxytetracycline Hcl + Inj. pheneramine maleate + Fluid and electrolyte therapy	48	35	72.91%

#### 4. Conclusions

Peste des petits Ruminants (PPR) is considered as the most potentially economically important disease of goats in Bangladesh. The present study has been made to know the present situation of peste des petits ruminants disease in Babugonj upazilla under Barishal district. Study observed that Black Bengal goats are more susceptible to PPR as compared to Jamunapari goats. Here male was more resistant than female to PPR infection. Although there is no specific treatment against PPR due to viral etiology. So combined antibacterials, antihistaminic drugs as well as fluid and electrolytes therapy should be provided against PPR infection in goats. The chances of other bacterial infections especially pneumonia and gastroenteritis increases which may be due to immuno suppressive nature of the PPR disease and hence, it causes serious economic losses and also markedly decreases the production of the infected goats. Regular vaccination, proper surveillance and monitoring can eradicate the disease. Further extensive study should be needed to determine the accurate prevalence and the therapeutic management of the disease in study area.

#### Conflict of interest

None to declare.

#### Authors' contribution

Mohammad Lalmoddin Mollah designed and supervised the experiment. Maria Akter and Chalanika Sarker carried out the experiment and wrote the manuscript. Dipa Rani Pal and Ashraful Kayser finally reviewed the manuscript. All authors have read and approved the final manuscript.

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