

**Assessment of Clinical Cases in Goats Registered at the  
Selected Veterinary Hospitals in Bangladesh: Special emphasis  
on Peste Des Petis Ruminants**



A clinical Report Submitted in Partial Fulfillment of the Requirement for the  
Degree of Doctor of Veterinary Medicine

A Report submitted by

Roll No: 13/02

Reg. No: 00907

Intern ID: 02

Session: 2012-13

**Faculty of Veterinary Medicine**

**Chittagong Veterinary and Animal Sciences University  
Khulshi, Chittagong-4225**

**September, 2018**

**Assessment of Clinical Cases in Goats Registered at the  
Selected Veterinary Hospitals in Bangladesh: Special emphasis  
on Peste Des Petis Ruminants**



**A Clinical Report Submitted as per approved styles and contents**

-----  
**Signature of Author**  
**Md.Mashiur Rahman Khan**  
Roll No: 13/02  
Reg. No: 00907  
Intern ID: 02  
Session: 2012-13

-----  
**Signature of Supervisor**  
**Md.Ahasanul Hoque**  
Professot  
Department of medicine and surgery  
Chittagong Veterinary and Animal Sciences  
University  
Khulshi, Chittagong-4225

**Chittagong Veterinary and Animal Sciences University**  
**Khulshi, Chittagong-4225**

**September, 2018**

## **Acknowledgements**

I consider it my utmost obligation to express my gratitude to Almighty, theomnipresent, kind and merciful who gave me the health, thoughts and the opportunity to complete this task.

I was fortunate in having the generous advice and encouragement of my learned supervisor, **Dr. Md. Ahasanul Hoque**, Professor, Dept. of Medicine and Surgery, Faculty of Veterinary Medicine, Chittagong Veterinary and Animal Sciences University in selecting the research topic, inspiring scholastic guidance, simultaneous inspiration, constructive criticism, enormous suggestions and sympathetic at every step right from research synopsis to final manuscript writing.

Special thanks to **Dr. Shuvo Singha**, **Dr. Pronesh Dutta** (MS Fellow in Epidemiology CVASU), **Dr. Shinchita Rahman** (Veterinary Surgeon, Upazilla Veterinary Hospital, Sadar, Rangpur) for their kind co-operation.

Finally, the author expresses his deepest sense of gratitude and sincere thanks to all of his well-wishers, friends, kith and kins for their blessing throughout the academic life.

**The Author**

**September, 2018**

## Abstract

Goat rearing has enormous potential for generating income and providing good quality protein to people in Bangladesh. However, disease is one of the limiting factors in raising goats. A total of 92 clinical goat cases (44 Teaching Veterinary Hospital: TVH, Chittagong Veterinary and Animal Sciences University: CVASU and 48 Rangpur Sadar Upazilla Veterinary Hospital: UVH) were used to assess the relative burden of diseases. The cases were presented to the respective hospitals during November 2017 to March 2018. Clinico-epidemiological, diagnosis and treatment data were recorded using newly developed CVASU hospital record keeping sheet. Cases were diagnosed according to clinical history, signs and laboratory tests (in some cases, for instance Coproscopy for identification of parasitic eggs). Case distribution by hospital was 12.5% Peste Des Petis Ruminants (PPR), 8.3% nutritional disorder, 4.2% acidosis, 4.2% parasitic infestation, 2.1% coccidiosis in TVH vs. 20.4% PPR, 16.3% parasitic infestation, 8.2% indigestion, 4.1% acidosis and 4.1% coccidiosis in UVH. Cases were comparatively higher in Black Bengal Goat (41.7%) than either in Cross bred (39.6%) or Jamnapari (18.8%) ( $p < 0.05$ ). PPR cases were significantly higher in UVH (20.4%) than in TVH (12.5%); in semi-intensive rearing system (68.8%) than in intensive rearing system (25%); in poor body condition score (BCS) (37.5%) than other (BCS) ( $p < 0.05$ ) non-vaccinated (87.5%) than in vaccinated goats (12.5%). Commonly observable clinical signs are diarrhea (83-100%), coughing (80-83%), sneezing (40%), fever (12.5%). In TVH; PPR cases were treated with Diadin® (Sulfonamide) (67%), ceftriaxone (10%), procaine-penicillin (10%) and ciprofloxacin (20%). In UVH PPR cases were treated with diadin (40%), gentamicin (16.7%) and moxacin (16.7%). In conclusion PPR was more frequent clinical case in this study. Rearing system, vaccination status and breed were significant factors associated with the occurrence of PPR. Multiple antibiotics were used against PPR cases which could develop antibiotic resistance.

**Keywords:** PPR, TVH, SAQTVH, Antibiotic

## Table of Contents

<b>Acknowledgements.....</b>	<b>I</b>
<b>Abstract .....</b>	<b>II</b>
<b>Table of Contents .....</b>	<b>III</b>
<b>List of Tables.....</b>	<b>IV</b>
<b>Chapter I: Introduction .....</b>	<b>1</b>
<b>Chapter II: Materials and Methods .....</b>	<b>3</b>
<b>2.1. Veterinary Hospitals.....</b>	<b>3</b>
<b>2.2. Cases .....</b>	<b>3</b>
<b>2.3. Case assessment.....</b>	<b>3</b>
<b>2.4. Data collection .....</b>	<b>3</b>
<b>2.4. Data entry and data analysis.....</b>	<b>4</b>
<b>Chapter 3: Results.....</b>	<b>5</b>
<b>3.1. Distribution of Clinical Cases in Goats .....</b>	<b>5</b>
<b>3.2. Association of PPR and different factors .....</b>	<b>7</b>
<b>3.3. Observable clinical signs of PPR cases in goats.....</b>	<b>8</b>
<b>3.4. Description of drug uses against PPR in goats .....</b>	<b>8</b>
<b>Chapter IV: Discussion .....</b>	<b>9</b>
<b>Limitations.....</b>	<b>10</b>
<b>Conclusions.....</b>	<b>10</b>
<b>Chapter V: Recommendations .....</b>	<b>11</b>
<b>Chapter VI: References.....</b>	<b>12</b>
<b>Biography.....</b>	<b>16</b>

## **List of Tables**

<b>Table 1: Frequency distribution of clinical cases in goats at the selected veterinary hospitals</b>	<b>5</b>
<b>Table 2: Association between occurrence of PPR in goats and the selected factors</b>	<b>7</b>
<b>Table 3: Observable clinical signs of PPR cases in goats (N=16 goats)</b>	<b>8</b>
<b>Table 4: Antibiotic treatment used in Peste Des Petis Ruminants</b>	<b>8</b>

## Chapter I: Introduction

Goat rearing is so popular in Bangladesh because of its excellent production potential which provides nutrition and develops rural economy. A total goat population in Bangladesh is 25.8 million (DLS, 2016) with three different rearing systems: i) intensive, ii) semi-intensive and iii) free ranging (Hasan et al., 2018). Although goat rearing has promise, there are many challenges of which different infectious and non-infectious diseases and nutritional diseases are most important problems (Brun et al., 2008). Common reported diseases in goats in Bangladesh were PPR (7.99 to 10%) (Parvez et al., 2014), myiasis (11.6 to 55.5%) (Imtiaz et al., 2014), parasitic infestation (26.6 to 29.8 %) (Alam et al., 2018) and nutritional disorder or deficiency (9.9%) (Sultana et al., 2016).

Bio-security and hygienic status of goat farms in Bangladesh are reported to be substandard (Hashem et al., 2016) which is also one of the reasons to introduce different diseases to farm premises (Hossain et al., 2011).

Immunization against PPR is quite common, but coverage is poor and vaccine failure is frequently occurred (Jaitner et al., 2001). PPR caused by PPR virus (PPRV) of the genus *Morbillivirus* of the family Paramyxoviridae which affects goat, sheep and gazelles (Elzein et al., 2004,). It causes huge mortality (10-15%) (Abubakar et al., 2009). PPR is distributed in small ruminants in tropical and subtropical countries (Jilo et al., 2016.). Reported risk factors involved with the incidence of PPR in goats were lack of veterinary service, large herd size, intensive farming (Ozkul *et al.*, 2002).

Deworming against common parasitic infestation in goats is irregularly occurred. Though PPR is contagious viral disease and vaccination and good farm hygiene is effective way of preventing PPR, clinical cases are treated symptomatically with different drugs including using antibiotics. Therefore, there is likely chance to have developed antibiotic resistance.

As PPR is more economic goat disease and frequently reported diseases at different veterinary hospitals in Bangladesh I therefore chose to study clinical PPR cases (in particular) in goat during my veterinary hospital rotation.

The specific objectives of this study were

- i) To estimate proportionate prevalence of PPR and other clinical goat cases,
- ii) To determine associated factors for the occurrence of PPR,
- iii) To describe observable clinical signs of PPR
- iv) To overview antibiotic prescribed against clinical PPR cases.



## **Chapter II: Materials and Methods**

### **2.1. Veterinary Hospitals**

Teaching Veterinary Hospital (TVH), Chittagong Veterinary and Animal Sciences University and Sadar Upazilla Veterinary Hospital (UVH), Rangpur (internship placements) were chosen for producing my clinical scientific report. These two hospitals efficiently provide services to livestock farmers around its respective catchment areas. TVH is meant for students' learning and practices, as well as offers public services.

### **2.2. Cases**

On an average 13-17 different cases per day in UVH and 25 cases per day in TVH were presented to the hospitals for treatment, preventive and other purposes. The period of clinical rotation was 58 days (1 February to 30 March, 2018 at UVH) and 55 days (17 November, 2017 to 11 January, 2018 at SAQTVH). Huge number of clinical cases with varieties were attended and handled at the placements during the rotation. However, in this clinical report a total of 92 clinical cases in goats were included for the study.

### **2.3. Case assessment**

Cases were evaluated mainly on clinical history, clinical sign and clinical examination. In clinical history, I took information about onset and types of clinical signs. In clinical examination, I observed temperature, mucous-membrane, salivation, cough, vomition, urination, fecal color, vaccination status, skin lesions, mouth lesions, udder lesion, dehydration, lymphnode, foot lesion and ectoparasite. For endoparasitic infection I performed Coproscopy.

### **2.4. Data collection**

Data were collected using a structured hospital record keeping sheet developed by CVASU Epidemiology group. Case data and animal level data (age, sex, breed, BCS, rearing system etc) along with drug data (name and kind, dose and duration) were registered.

#### **2.4. Data entry and data analysis**

Data obtained were entered into Microsoft Excel-2007 and transferred to STATA13, STATA Corp LLC software for statistical analysis. Descriptive analysis was performed. Fisher's exact test was used to assess the difference of proportion of PPR cases between categories of each factor studied. The results were expressed as frequency numbers and percentage. The p value of  $\leq 0.05$  was considered as significant.

## Chapter 3: Results

### 3.1. Distribution of Clinical Cases in Goats at the Veterinary Hospitals

PPR (12.5%) followed by nutritional deficiency (8.3%), myiasis (8.3%) and corneal opacity (6.3%) were most commonly registered cases in goats at TVH, whereas PPR (20.4%), parasitic infestation (16.3%) and food indigestion (8.2%) at UVH (Table 1).

**Table 1:** Frequency distribution of clinical cases in goats at the selected veterinary hospitals (January to March 2018)

Types of cases	TVH		UVH	
	N	%	N	%
Peste des petis ruminant	6	12.5	10	20.4
Parasitic infestation	2	4.2	8	16.3
Nutritional deficiency	4	8.3	0	0
Myiasis	4	8.3	0	0
Acidosis	2	4.2	6	13.6
Dog bite	2	4.2	2	4.1
Coccidiosis	1	2.1	2	4.1
Corneal opacity	3	6.3	0	0
Dermatitis	1	2.1	1	2
Abortion	1	2.1	0	0
Abscess	1	2.1	0	0
Anaplasmosis	1	2.1	0	0
Common cold	0	0	1	2.0
Anorexia	0	0	2	4.1
Arthritis	0	0	1	2
Aspiration pneumonia	0	0	1	2
Atresia ani	0	0	1	2
Chronic mastitis	0	0	1	2

Contagious ecthyma	1	2.1	0	0
Crop impaction	0	0	1	2
Dermatitis	1	2.1	1	2
Coenurosis	0	0	1	2
Heel erosion	1	2.1	0	0
Hypocalcaemia	1	2.1	0	0
Infectious coryza	0	0	1	2
Injury	0	0	1	2
Internal injury in vagina	1	2.1	0	0
Joint ill	1	2.1	0	0
Leg injury	1	2.1	0	0
Maggot	1	2.1	0	0
Mange	1	2.1	0	0
Estrous	1	2.1	0	0
Fascioliasis	1	2.1	0	0
Newcastle disease	0	0	1	2
Parasitic Gastro enteritis	1	2.1	0	0
Pasteurellosis	1	2.1	0	0
Physiological anestrous	1	2.1	0	0
Pink eye	1	2.1	0	0
Polioencephalomalacia	1	2.1	0	0
Respiratory tract infection	1	2.1	0	0
Seizure	1	2	0	0
Teat obstruction	1	2	0	0
Tetanus	1	2	0	0
Parvoviral diarrhoea	0	0	1	2
Dystocia	0	0	1	2
Total	49		44	

**TVH:** Teaching Veterinary Hospital; **UVH:** Upazilla Veterinary Hospital

### 3.2. Association of Peste des Petis Ruminant and different factors

None of the factors was significantly associated with the occurrence of PPR in goats except BCS (UVH). However, in general trend the proportion of PPR was higher in female, poor BCS and non-vaccinated individuals (Table 2).

**Table 2:** Association between occurrence of PPR in goats and the selected factors

Factors	Categories	TVH			UVH		
		PPR			PPR		
		+	-	P (Fisher's exact test)	+	-	P (Fisher's exact test)
Breed	Cross	2(10.5%)	17	0.91	1(12.5%)	9	0.51
	Local	3(15%)	17		9(30%)	21	
	Jamnapari	1(11.1)	8		0	1	
Sex	Male	3(15.8%)	16	0.6	7(50%)	10	0.75
	Female	3(10.34%)	26		3(9.4%)	29	
BCS	Clutch	0	5	0.83	1(100%)	0	0.05
	Poor	3(14.3%)	18		3(37.5%)	5	
	Fair	2(12.5%)	14		4(16.7%)	23	
	Good	1(16.7%)	5		2(66.7%)	1	
Vaccination (PPR)	Yes	0	1	0.7	1(50%)	1	0.4
	No	6(12.8%)	41		9(24.3%)	28	

### 3.3. Observable clinical signs of PPR cases in goats

Regardless of the placement most frequent clinical signs were diarrhea, sneezing and coughing in the present study (Table 3).

**Table 3:** Observable clinical signs of PPR cases in goats (N=16 goats)

Clinical signs	Categories	TVH (N=6 goats)		UVH (N=10 goats)	
		n	%	n	%
Diarrhoea	Yes	6	100	10	100
Sneezing	Yes	4	40	4	40
Coughing	Yes	6	100	8	80

### 3.4. Description of Drug Uses against Peste Des Petis Ruminants in Goats

Several antibiotics were prescribed for PPR cases in goats. Most common antibiotics were sulphonamides, gentamicin and moxacil at TVH and combination of kenamycin, colistin, neomycin and dexamethasone, ciprofloxacin, ceftriaxone and procaine penicillin at UVH (Table 4).

**Table 4:** Antibiotic treatment used in Peste Des Petis Ruminant

Antibiotics (Trade name)	Withdrawal period (Days)	Trade name	TVH		UVH	
			N	%	N	%
Sulfonamides	8	Diadin	4	66.7	4	40
Kenamycin, Colistin, Neomycin, Dexamethasone		KCND	0	0	2	20
Ciprofloxacin	7	Civoxvet	0	0	2	20
Gentamicin	7	Gentason plus	1	16.7	0	0
Moxacil	25	Moxilin vet	1	16.7	0	0
Ceftriaxone		Tribac vet	0	0	1	10
Procaine penicillin	7	Streptophen	0	0	1	10

## Chapter IV: Discussion

Diversity of clinical goat diseases is remarkable in the present study which is not very unlikely as many of earlier studies found similar pattern of disease diversity in Bangladesh (Rahman et al.,2012)

The proportionate prevalence of PPR in goats (12.5-20.4%) is supported by many Bangladeshi studies (Sarker et al., 2011; Rahman et al., 2016; Rahman et al., 2018) and the cited studies estimated 20.6 to 27.8% PPR in goats. However, there were variable results reported in different parts of the country (5.2 % to 50.3%) (Rahman et al. and Islam, et al., 2012; Bupasha et al., 2015; Rahman et al., 2018). This discrepancy could be due to number of factors such as population size, season and study area.

Virtually no factor was associated with the occurrence of PPR in goats which might be due to the reason of a small sample size reducing study power. However, many investigators reported the following risk factors associated with PPR in goats: rainy season had significantly higher PPR prevalence than in any other season (32.1% vs.67.9 %) (Rahman et al.,2012) Black Bangal was commonly affected by PPR than in other breeds (30.2% vs. 21.1%) (Rahman et al., 2016); Goats with poor body condition score had more PPR prevalence than in better body condition score (16.7% vs.2.4 %) (Woma et al., 2015); vaccinated goats were less commonly affected than in non-vaccinated goats (66.4% vs. 19.6%) (Islam *et al*, 2012). However, proper statistical analysis of logistic regression should have done to identify risk factors

Diarrhea, sneezing and coughing were common observable clinical signs which are in fact identical to the findings of other studies conducted elsewhere in Bangladesh and neighboring countries (Obi et al., 1983; Roeder et al., 1994)

The referred studies also published additional clinical signs: such as pyrexia, necrosis and erosions of the oral cavity, pneumonia, erosions of the vulva and prepuce as well as abortion, ocular and nasal discharge. However, PPR diagnosis based on clinical signs is less sensitive which may include false positive PPR in this study.

In this study the mostly used antimicrobial was sulfur drug (more than 50%) which is some extent similar to the findings of a study conducted by Sarker et al. (2016) (34%) and Katakweba et al. (2012) (23%). However, neither antibiotics nor sulphur drugs are specific treatment for goat PPR. These drugs are used to prevent secondary bacterial infection which then helps stimulate body system to produce necessary immunity for combating against PPR. But the best approach is to vaccinate susceptible goats with PPR vaccine strictly along with modifying risk factors to reduce the level PPR occurrence.

## **Limitations**

Number of limitations was encountered for the current study: i) short study period, ii) small sample size and iii) non-laboratory disease diagnosis. Information bias might have occurred though necessary care was taken while recording data through face-to-face farmers' interview.

## **Conclusions**

In conclusion great varieties of goat diseases were recorded, with more prevalent cases of PPR, parasitic infestation, acidosis- in this study. No potential risk factor was determined in this study. Sulphur drugs were commonly prescribed drugs.



## **Chapter V: Recommendations**

A future study should be conducted to estimate true status of PPR and associated risk factors in the study areas. Awareness of rational use of antibiotics or sulphur drugs should be built up among farmers and veterinarians to maintain antimicrobial efficiency.

## Chapter VI: References

- Abubakar, M., Jamal, S. M., Arshed, M. J., Hussain, M. and Ali, Q. 2009. Peste des petits ruminants virus (PPRV) infection; its association with species, seasonal variations and geography. *Tropical Animal Health and Production*, 41(7), 1197.
- Alam, M. B., Mahmud, T., Khan, S. A., Islam, A., Hai, M. A. and Hassan, M. M. 2018. Occurrence of diseases and disease conditions in cattle and goats at the Upazilla Veterinary Hospital, Debidwar, Comilla. *Journal of Advanced Veterinary and Animal Research*, 5(2), 117-122.
- Brun, A., Albina, E., Barret, T., Chapman, D. A., Czub, M., Dixon, L. K. and Ortego, J. 2008. Antigen delivery systems for veterinary vaccine development: viral-vector based delivery systems. *Vaccine*, 26(51), 6508-6528.
- Bupasha, Z. B., Hossain, F., Sarker, M. S., Ahaduzzaman, M. and Biswas, P. K. 2015. Variability in prevalence and therapeutic effectiveness in PPR affected goats of Thakurgoan, Bangladesh. *Annals of Veterinary and Animal Science*, 2(1), 15-19.
- Elzein, E. A., Housawi, F. M. T., Bashareek, Y., Gameel, A. A., Al-Afaleq, A. I. and Anderson, E. C. E. C. 2004. Severe PPR Infection in Gazelles kept under semi-free range conditions. *Journal of Veterinary Medicine, Series B*, 51(2), 68-71.
- Hasan, M. M., Talukder, S., Meghla, M. A., Shithi, K. N., Akter, S., Hasan, N. and Lima., R. A. 2018. Status of milk production and subclinical mastitis in dairy cows along with socio economic condition of the farmers. *Bangladesh Journal of Veterinary Medicine*, 16(1), 71-79.

- Hashem, M. A., Hossain, M. M., Akbar, M. A. and Akhter, S. 2016. Evaluation of exiting livestock and poultry polices and way forward to their development in Bangladesh. Evaluation
- Hossain, M. E., Chakma, S., Khatun, M. M., Hasanuzzaman, M., Miah, M. Y. and Biswas, M. A. A. 2011. Production systems of swine in the rural areas of Rangamati and Khagrachari districts of Bangladesh. Bangladesh Journal of Animal Science, 40(1-2), 28-33.
- Imtiaz, M. A., Rahman, M. A., Islam, K., Barua, M., Alim, M. A., Chowdhury, S. and Sikder, S. 2014. Prevalence and associated risk factors of myiasis in different areas of Chittagong, Bangladesh. Research Journal for Veterinary Practitioners, 2(2), 22-27
- Islam, M. S., Khan, M. S. I., Kader, H. A., Begum, M. R. and Asgar, M. A. 2012. Prevalence of PPR of goat and their response to antibiotic treatment at Mirzaganj Upazila of Patuakhali District. Journal of Environmental Science and Natural Resources, 5(2), 181-184.
- Jaitner, J., Sowe, J., Secka-Njie, E. and Dempfle, L. 2001. Ownership pattern and management practices of small ruminants in The Gambia—implications for a breeding programme. Small Ruminant Research, 40(2), 101-108.
- Jilo, K. 2016. Peste Des Petits Ruminants (PPR): Global and Ethiopian Aspects. A standard review. Global Veterinaria, 17(2), 142-153.
- Katakweba, A. A. S., Mtambo, M. M. A., Olsen, J. E. and Muhairwa, A. P. 2012. Awareness of human health risks associated with the use of antibiotics among livestock keepers and factors that contribute to selection of antibiotic resistance

bacteria within livestock in Tanzania. *Livestock Research for Rural Development*, 24(10), 170.

Lucky, N. S., Hossain, M. K., Roy, A. C., Haque, M. M., Uddin, A. M., Islam, M. M. and Howlader, M. M. R. 2016. A longitudinal study on clinical diseases and disorders of cattle and goats in Sylhet, Bangladesh. *Journal of Advanced Veterinary and Animal Research*, 3(1), 24-37.

Obi, T. U., Ojo, M. O., Durojaiye, O. A., Kasali, O. B., Akpavie, S. and Opasina, D. B. 1983. Peste des petits ruminants (PPR) in goats in Nigeria: clinical, microbiological and pathological features. *Zentralblatt für Veterinärmedizin Reihe B*, 30(1-10), 751-761.

Özkul, A., Akca, Y., Alkan, F., Barrett, T., Karaoglu, T., Dagalp, S. B. and Burgu, I. 2002. Prevalence, distribution, and host range of Peste des petits ruminants virus, Turkey. *Emerging Infectious Diseases*, 8(7), 709.

Parvez, A., Prodhan, A. M., Das, B. C. and Khatun, R. 2014. Prevalence of clinical conditions in dogs and cats at teaching veterinary hospital (TVH) in Chittagong veterinary and animal sciences university, Bangladesh. *Research Journal Veterinar Practitioners*, 2(6), 99-104.

Rahman, M. M., Alam, K. J., Alam, M. S., Hasan, M. M. and Moonmoon, M. 2016. A study on prevalence of peste des petits ruminant (PPR) in goat at Bagmara upazilla at Rajshahi district in Bangladesh. *Research in Agriculture Livestock and Fisheries*, 3(2), 339-344.

Rahman, M. A., Islam, M. A., Rahman, M. A., Talukder, A. K., Parvin, M. S., and Islam, M. T. 2012. Clinical diseases of ruminants recorded at the Patuakhali Science and Technology University Veterinary Clinic. *Bangladesh Journal of Veterinary Medicine*, 10(1&2), 63-73.

- Rahman, M. Z., Haider, N., Gurley, E. S., Ahmed, S., Osmani, M. G., Hossain, M. B. and Zeidner, N. 2018. Epidemiology and genetic characterization of Peste des petits ruminants virus in Bangladesh. *Veterinary Medicine and Science*.
- Roeder, P. L., Abraham, G., Kenfe, G. and Barrett, T. 1994. Peste des petits ruminants in Ethiopian goats. *Tropical Animal Health and Production*, 26(2), 69-73.
- Sarker, M., Ahaduzzaman, M., Ghosh, S. and Bary, M. 2016. Cross-Sectional Survey on Prescribing Patterns for Food Animal Medications in Bangladesh. *Journal of Dairy, Veterinary and Animal Research*, 3, 00089.
- Sarker, S. and Islam, M. H. 2011. Prevalence and risk factor assessment of Peste des petits ruminants in goats in Rajshahi, Bangladesh. *Veterinary World*, 4(12), 546.
- Woma, T. Y., Kalla, D. J. U., Ekong, P. S., Ularamu, H. G., Chollom, S. C., Lamurde, I. I. and Bailey, D. 2015. Serological evidence of camel exposure to peste des petits ruminants virus (PPRV) in Nigeria. *Tropical Animal Health and Production*, 47(3), 603-606.

## **Biography**

This is Md. Mashiur Rahman Khan, son of Mr. Mosharraf Hossain Khan and Late. Mrs. Feroza Khanam. I am from Rangpur district. I completed S.S.C in 2010 and H.S.C in 2012 with GPA 5.00. I got admitted into Doctor of Veterinary Medicine (DVM) degree under Chittagong Veterinary and Animal Sciences University in 2012-2013 session. As an upcoming Veterinarian I would like to dedicate my rest of the life for the welfare of animals. I am keen to be a field veterinarian as well as a skilled pet practitioner.

