

## Seroepidemiology of PPR in goats in Basrah province

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### Abstract

This study was conducted in Basrah at period from March throughout the September 2011. 1175 blood samples were collected from goats in five regions of Basrah province that have no signs of disease and no any history of vaccination to estimate the seroprevalence of PPR in goats and undergoes to the cELISA test. The results of the study revealed that , the seroprevalence of the disease was 27.6 % . There were no significant differences in the seroprevalence in relation to sex and regions of the study ( $P > 0.05$  ). On other hand, the prevalence of PPR was higher significantly in the goats between 1 – 3 years of age compared with other age groups.

### Introduction

Peste des petits ruminants ( PPR ) is an acute highly contagious and economically important viral disease in small ruminants especially goats and sheep ( 1 ) with morbidity and mortality rates as high as 100% and 90 % respectively ( 2 ) . The disease characterized by high fever, oculonasal discharge, pneumonia, necrosis, and ulceration of mucous membranes and inflammation of gastrointestinal tract leading to severe diarrhea ( 3,4 and 5 ). The causative agent is enveloped , pleomorphic particles containing single

stranded RNA with negative sense as a genome and is classified under Paramyxoviridae , genus Morbillivirus ( 6 and 7 ) . PPR virus is transmitted between animals such as sheep , goats and other small ruminants through the inhalation of aerosols and direct contact with ocular and nasal secretions , feces , contaminated water and feed troughs ( 8 and 9 ) The aim of this study to determined the seroprevalence of PPR in goats in Basrah province and to detect factors influencing the epidemiology of PPR virus infection .

### Materials and methods

A total of 1175 blood samples obtained from goats and kids of both sex with age range between one months to five years in five distinct regions of Basrah were used for serological study. Blood samples were centrifuged for ten minutes at 1500 rpm to obtain the serum and then stored in  $-20\text{ C}^\circ$  until use. The clinical symptoms of PPR were not observed and no vaccine was used in the flocks including goats sampled for serological study . Animals housed 65 different flocks in 5 regions including east , west , north , south and centre of Basrah province .For detection of PPR virus antibodies in goats sera, a diagnostic competitive

ELISA (c ELISA) was used as a described by ( 10 ). The test used monoclonal antibody to neutralizing epitope of haemagglutinin protein of the virus . The ELISA plate ( From Nunc. Maxisorp , Germany ) was coated with the PPR virus antigen and after washing proper blocking was done . After washing, test sera were added along with monoclonal antibody. Following incubation and washing, conjugate and substrate were added for color development. Absorbance was read at 492 nm and interpretation of the test results was made according to the paper.

## Results

Out of 1175 serum samples collected, 325 were positive for antibodies against PPR ( 27.6 % ). The seroprevalence was higher in females 286 out of 1000 serum samples were collected ( 28.6 % ) than in males 39 out of 175 ( 22.3 ) , but this differences was statistically not significant ;  $x^2 = 2.98$  ;  $P > 0.05$  ( Table 1 ) .Table 2 show the seroprevalence of PPR antibodies according to the regions of the study , the seroprevalence were 26.1% , 26% , 26.8% , 28.3% and 31.2% for east, west , north , south and

centre of Basrah province respectively. There were no significant differences in the seroprevalence among different regions (  $x^2 = 2.163$  ;  $P > 0.05$  ) .Table 3 show the seroprevalence of PPR antibodies according to the age groups , The prevalence of PPR was higher in goats between 1 – 3 years of age than other age groups , the seroprevalence were 39.3% in goats between 1 – 2 years of age , 22.5% in the kids less than 1 year of age and 24.1 % in the goats more than 3 years of age (  $x^2 = 29.767$  ;  $P < 0.01$  ) .

Table 1 : Seroprevalence of PPR in goats in relation to sex

	Total	Positive	%
Males	175	39	22.3
Females	1000	286	28.6
Total	1175	325	27.6

$$x^2 = 2.98 ; P > 0.05$$

Table 2 : Seroprevalence of PPR in goats in relation to regions of the study .

	Total	Positive	%
East	230	60	26.1
West	250	65	26
North	209	56	26.8
South	265	75	28.3
Centre	221	69	31.3

$$x^2 = 2.163 ; P > 0.05 .$$

Table 3 : Seroprevalence of PPR in goats in relation to age groups .

	Total	Positive	%
< 1 year	426	96	22.5
1 – 3 years	315	124	39.3
> 3 years	434	105	24.1

$$x^2 = 29.767 ; P < 0.01$$

## Discussion

PPR has been reported in the goats and sheep in a number of countries including Afghanistan , Iran , India , Turkey , Jordan and Ethiopia ( 11 , 12 , 13 and 14 ) . Although the

prevalence estimation have to be interpreted with caution it had not been possible to ensure that random selection was used at all sampling stages , the results indicate that PPR has been

circulating in the most areas of the province before large vaccination campaigns were implemented . Lack large scale vaccination campaigns before the survey was conducted suggest that our seroprevalence estimates are likely to reflect infection ( 15 ) .This study provides valuable data on the serological status of PPR in goats in Basrah and there is no any previous study for the serological status of PPR in Iraq. Infection of PPR were reported in all regions of Basrah province indicating the heavy exposure to the virus .Serological studies carried out in Middle East and Africa show that , the prevalence of PPR infection varies between 5.8 % - 57.3 % ( 16 and 17 ) . The overall seroprevalence 27.6 % observed in this study is higher than those reported by ( 18 and 19 ) in Turkey ; ( 20 ) in Uganda and ( 21 ) in Ethiopia ; but lower than those reported by ( 13 ) in Iran and ( 22 ) in Sudan. It is commonplace knowledge that the

results of seroprevalence studies are influenced by many factors such as the number of sampled animals, the age of the animals, the time of sampling, the condition of care and feeding , individual differences and so on.The findings of this study also suggest that there was sex predilection of the virus and there was no significant difference in the seroprevalence of PPR in the different regions of the study suggests that the disease was prevalent throughout the area of study equally and there was no previous data for comparison. On other hand, the findings suggest that animals that were 1 – 3 years old had higher seropositivity to PPR than any other age group. This result was in agreement with these reported by (20 , 23, 24 and 25 , ) . It has been documented that, goats exposed to PPR at very young age may carry antibodies for 1 – 2 years following exposure ( 26 ) .

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### الخلاصة

أجريت هذه الدراسة في البصرة للفترة من اذار الى أيلول 2011 . تم جمع 1175 نموذج دم من الماعز غير الملقح سابقا في خمس مناطق جغرافية من محافظة البصرة و خضعت نماذج الدم لاختبار الاليزا للتحري عن الاضداد . أظهرت النتائج ان نسبة انتشار طاعون المجترات الصغيرة في الماعز كانت 27.6 % ، ولم تسجل فروقات معنوية في نسبة انتشار المرض بين الاناث و الذكور وكذلك بين مناطق الدراسة المختلفة . كما أظهرت الدراسة ان نسبة انتشار المرض كانت أعلى معنويا في الماعز بعمر 1 – 3 سنوات مقارنة بالفئات العمرية الاخرى .