

CHICKEN MYCOPLASMOSIS IN BANGLADESH

H. R. Biswas¹, H. Khatun², A. H. M. Mustafa², A. H. Miah²,
M. M. Hoque and M. L. Rahman

Bangladesh Livestock Research Institute, Savar, Dhaka, Bangladesh

Summary

A total of 4,800 chicken sera from Broiler, Layer, and Local chicken were tested to detect the presence of *Mycoplasma gallisepticum* (Mg) antibody by Rapid Serum Plate and Tube Agglutination Test. Positive cases recorded in this study were 945 (27%) in Broiler, and 436 (36.7%) in layer chicken sera and no. *M. gallisepticum* antibody could be seen in the local chicken sera. It is evident from the present findings that *Mycoplasma gallisepticum* infection has been prevailing in this country in improve breeds of chickens.

(Key Words : Mycoplasma, Chicken, Serodiagnosis)

Introduction

Mycoplasma gallisepticum is commonly designated as Chronic Respiratory Disease (CRD) of chicken. Mortality is negligible in uncomplicated infection in adult flock but as much as 30% in younger and in complicated outbreaks (Hofsted, 1984). The disease caused economic losses from reduced feed conversion and egg production and downgrading of carcasses and increased medication costs is an additional factor that one of the costliest disease problems is confronting the industry. Conducting adequate prevention and control programme is also expensive. Egg transmission is a major factor influencing control efforts (Hurry and Yoder, 1984; Carter and Cole Jr, 1990; Jordan, 1990). Chicken rearing is though getting momentum as industry and hundreds of poultry farms are being setup in this country to boost up chicken, egg, meat production and the rural economy, but disease problems like mycoplasmosis presents a major threat to the development of this industry. The present study has been aimed at to study the incidence of *Mycoplasma gallisepticum* infec-

tion in chicken for the first time in Bangladesh.

Materials and Methods

During the period of 1980-1990, a total of 4,800 chicken sera were received by this Central Disease (Veterinary) Investigation Laboratory, Dhaka, Bangladesh from different layer and broiler poultry farms and were tested for *Mycoplasma gallisepticum* infection by Rapid Serum Plate and Tube Agglutination Tests with *Mycoplasma gallisepticum* stained antigens (Provided by Wellcome Reagents Ltd, England).

Rapid Serum Plate Agglutination Test (RSPAT)

The test was performed by placing a drop of serum approximately 200 microlitres on a white porcelain plate and mixed with two drops (approximately 400 ml) of Mg stained antigen. The drops were mixed to make a spot of about 2 cm in diameter, the plate was rotated gently and the test was read within 2 minutes.

Tube Agglutination Test (TAT)

The sera showed positive reactions to RSPAT with Mg stained Ag were subjected to Tube Agglutination Test (TAT). The antigen used in RSPAT has also been used in TAT by diluting the antigen 1 : 12.5 in phenolized (0.25%) buffered saline (pH 7) (Hurry et al., 1984) and added equal volumes of doubling dilutions of sera commencing at 1 : 5.

¹Address reprint requests to Dr. H. R. Biswas, Principal Scientific Officer, Animal Health Research Division, Bangladesh Livestock Research Institute, Savar, Dhaka, Bangladesh.

²Central Disease Investigation Laboratory, 48, Kazi Alauddin Road, Dhaka, Bangladesh.

Received August 24, 1992

Accepted January 6, 1993

Results and Discussion

Out of 4,800 chicken sera tested, 1,526 sera gave positive reactions to *Mycoplasma gallisepticum* (Mg) stained antigen (Ag) on RSPAT (table 1) and they were subjected to Tube Agglutination Test (TAT) and 1,381 (90.50%) sera gave positive reactions with titres varied from 1:5 to 1:160 as shown in table 2. In Rapid Serum Agglutination Test formation of tummy clumps in the mixture was considered positive while in Tube Agglutination Test clearing of the supernatant fluid with deposition of antigenic clumps at the bottom of the tube. Positive reactions at 1:10 titre or greater were considered as positive Mg infection. Out of 3,500 broiler chicken sera only 945 (27.00%) and from 1,190 layer chicken sera 436 (36.64%) showed the significant level of antibody titre for *Mycoplasma gallisepticum*. No *Mycoplasma gallisepticum* antibody could be detected in local chicken. The absence of Mg antibody in local breed may be due to the fact that they are less susceptible to Mg. The percentage of Mg infection was 36.64% in the layer group and 27% in broiler. Both the Rapid Serum Plate and Tube Agglutination Tests (RSPAT & TAT) are reasonably accurate for identification of antibodies against *Mycoplasma*

gallisepticum. Those tests were used as Laboratory diagnostic aids. Lorna et al. (1974) reported that sera from birds infected with *Mycoplasma synoviae* of ten reacted with Mg antigen on RSPAT but were always negative with TAT. Roberts et al. (1967) reported that non specific reaction occurred in the serum agglutination tests with contaminated serum. While Roberts (1970) observed that Newcastle disease virus produced serological reactions in the Mg stained antigen in plate agglutination test one week after inoculation. In the majority of chickens the serological reactions had appeared within three weeks but in one chicken the reaction persisted for eight weeks. Vardaman (1971) reported that the other possible causes of non specific reactions have been suggested by different workers but not confirmed to date. Rapid serum plate agglutination test showed positive reactions in 1,526 sera of which 1,381 (90.50%) gave significant titres as shown in table 2. As these chickens were vaccinated against Newcastle disease and that may be responsible for non specific agglutination in RSPAT. From this study, the authors are convinced that *Mycoplasma gallisepticum* infection has been prevailing in this country in the improved chicken of both layer, broiler breeds but not in local chicken.

TABLE 1. RESULTS OF THE RAPID SERUM PLATE AGGLUTINATION TEST

Types of chicken	Number of sera tested	Number of sera positive to Mg	Percentage of sera positive to Mg	Number of negative samples	Percentage of sera negative to Mg
Layers	1,190	476	40%	714	60%
Broilers	3,500	1,050	30%	2,450	70%
Local	110	-	-	110	100%

TABLE 2. RESULTS OF THE TUBE AGGLUTINATION TEST

Types of chicken	Titre							Total
	5	10	20	40	80	160	320	
Broiler	105	450	220	105	90	80	-	1,050
Layer	40	200	70	65	60	41	-	476

CHICKEN MYCOPLASMOSIS

Literature Cited

- Hurry, W. Yoder Jr. 1984. Avian Mycoplasmas Diseases of Poultry Edited by Hofstad M. S. 8th Edn. 197.
- Jordan, F. T. W. 1990. Avian Mycoplasmosis Poultry Disease Edited by Jordan, F. T. W. 3rd Edn. 74.
- Lorna Timms and G. A. Cullan. 1974. Detection of *M. Synoviae* infection in chicken and its differentiation from *M. gallisepticum* infection, Br. Vet. J. 130:75.
- Roberts, D. H. and Olesiuk. 1967. Serological studies with *Mycoplasma synoviae* Avian Disease 11: 104-119.
- Roberts, D. H. 1970. Non specific agglutination reactions with *Mycoplasma gallisepticum* antigens Vet. Rec. 87:125-126.
- Vardaman, I. H. and H. W. Yoder Jr. 1971. Determination of non specific serological reactions to Avian Mycoplasma antigens, Poultry Sci. 50:183-186.