



Detection of Sub Clinical Infection of *Mycoplasma gallisepticum* in Commercial Chicken by Indirect ELISA

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Abstract | Chronic Respiratory disease in Poultry is mainly caused by *Mycoplasma gallisepticum* (MG). It causes huge economic loss to the poultry industry. The present research work has been undertaken to know the sero-prevalence of MG in commercial layers in Namakkal region of Tamil Nadu, India. A total of 103 commercial layer sera samples from 6 commercial layer farms were subjected to indirect ELISA. From 103 sera samples, overall prevalence found 53.40% for commercial layer chickens. The highest (100%) sero-prevalence of MG was recorded at 32 weeks and the lowest (0%) was recorded at 68 weeks of commercial layer chicken. This study demonstrated high sero-prevalence of MG in Commercial Layers. Therefore, routine monitoring of the commercial layer farms for MG infection should be recommended and mycoplasma control programmes must be strictly adhered.

Keywords | Poultry, *Mycoplasma gallisepticum*, Seroprevalence, ELISA

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INTRODUCTION

Among the respiratory diseases of poultry, Mycoplasmosis is a major one. Even though all the age groups of turkeys and chickens are susceptible to this disease, the occurrence of mycoplasmosis is higher in young birds when compare to adults (Ley and Yoder, 1997; Nunoya et al., 1995). It is mainly caused by *Mycoplasma gallisepticum* (MG) and *Mycoplasma synoviae* (MS). MG infection results in increase Feed conversion ratio, poor weight gain and high mortality in broiler and reduced egg production in layer chicken thereby it causes huge economic loss to the poultry industry (Kleven and Noel, 2008; Ley, 2008).

Flock testing and culling is the best control measure for MG infection (Ahmad et al., 2008). Diagnosis of MG can be done by microbial culture, serological tests and molecular methods (Jalilnia and Movassagh, 2011). But for detecting the subclinical infection in the flock serology is the

best tool (Barua et al., 2006). Thus, the present study has been undertaken to know the seroprevalence of *Mycoplasma gallisepticum* in commercial layer chicken in Namakkal region of Tamil Nadu, India.

MATERIALS AND METHODS

From 6 commercial layer farms in Namakkal region of Tamil Nadu, a total of 103 layer birds were selected for screening against MG by indirect ELISA. The age group of the birds ranged from 32 to 68 weeks. Standard vaccination protocol against Marek's disease, Newcastle disease, IBD and Pox were followed in all the commercial layer birds. But all the birds were not vaccinated against MG. Blood samples were collected aseptically and processed for serum separation as per standard methods. Then the sera samples were used for the serological study.

MG antigen coated plate (BioChek,UK) was used for the

detection of antibody by indirect ELISA test. As per the manufacturer instruction the ELISA test has been carried out and the S/P ratio was calculated. If the S/P ratio is ≤ 0.5 the sample is considered as negative and S/P ratio of >0.5 considered as positive i.e. vaccination or infection with MG.

RESULTS AND DISCUSSION

The results of the sero-prevalence of MG in commercial layers are given in Table 1. The highest (100%) sero-prevalence of MG was recorded at 32 weeks and the lowest (0%) was recorded at 68 weeks of commercial layer chicken. And overall seroprevalence of MG found 53.40% for commercial layer chickens.

Table 1: Sero-prevalence of MG antibody in commercial layer chicken by indirect ELISA

Farms	Age (weeks)	No. of sera tested	No. of +ve samples	Positive %	Overall prevalence
L1	35	13	12	92.31	53.40%
L2	43	16	14	87.50	
L3	50	29	14	48.27	
L4	32	13	13	100	
L5	62	16	2	12.5	
L6	68	16	0	0	

Previous surveys from France, Italy, Egypt and Jordan reported varying prevalence of 84%, 31%, 60% and 73.5% of MG by indirect ELISA respectively in commercial layers (Kempf et al., 1997; Mary et al., 1991; Osman et al., 2009; Saad and Dirgham, 2008). Another survey in commercial layer chickens of Poland revealed 65.2% sero-positivity of MG antibodies (Alina et al., 2000). In Bangladesh, 45.1% sero-prevalence of MG was found in layer chickens (Hossain et al., 2010). These above findings are concurrence with the present study and our results are very close in accordance with another finding obtained in India with a positivity rate of 54.4% (Reddy, 2014).

Regarding age-wise analysis, 100% prevalence of MG infection was seen in 32 weeks age group followed by 92.31% in 35 weeks layer chickens. In 68 weeks old layer chickens, the lowest sero-prevalence of 0% was found. It revealed that when the age increased the prevalence of MG infection has been decreased. Similar kinds of reports were obtained in Pakistan and Bangladesh (Ahmad et al., 2008; Hossain et al., 2010; Sarkar et al., 2005).

This denotes that the prevalence of *Mycoplasma gallisepticum* in commercial layers decreased with increasing age. Highest sero-prevalence in the younger age group, maybe due to laying stress of the birds which might made the

birds more prone to subclinical MG infections, and lowest rate of prevalence maybe due to treatment that were used in flocks. The adult birds were treated prophylactically with antimycoplasmal drugs in the feed and drinking water. So the chances of mycoplasmal infection have been reduced, there by the prevalence of MG has been decreased in adult birds. In consequence, *M. gallisepticum* is prevalent in India. Therefore, routine monitoring of the commercial layer farms for MG infection should be recommended. In future studies on the current topic are therefore recommended.

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CONFLICT OF INTEREST

There exists no conflict of interest

AUTHORS' CONTRIBUTION

All authors contributed equally.

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