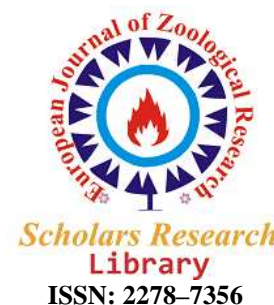




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Evaluation of *Mycoplasma gallisepticum* infection in Tabriz broiler breeder farms by RSA

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ABSTRACT

Mycoplasma gallisepticum (MG) is one of the most important diseases in Iranian poultry industry and all over the world. Mortality, poor weight gain and increasing of feed conversion ratio (FCR) were seen in MG infected flocks. In this study, 110 samples were taken from 9 broiler breeder farms located in Tabriz-Iran during 2011-2012. The prevalence of *Mycoplasma gallisepticum* was studied by RSA test, and the clinical signs and lesions were evaluated in all farms. Our results indicated that the prevalence of MG in Tabriz broiler breeder farms was 19.09% during study period. Also in farms infected with MG, severe conjunctivitis, lungs and trachea hyperemia, and severe airsacculitis with caseous exudates were obvious. It can be concluded that MG in broiler breeder farms have potency of great economical losses, and its clinical signs and gross lesions in infected birds were very severe and it could decline broiler breeders performance. And also because of controlling of MG in Iran the prevalence of MG was lower in comparison to previous years.

Key words: *Mycoplasma Gallisepticum*, Broiler breeders, RSA, Serology, Clinical Signs.

INTRODUCTION

Mycoplasma gallisepticum (MG) is one of the most important disease in poultry production and also it is the causative agent of chronic respiratory disease in chickens (14). MG infection causes significant economic losses in the poultry industry due to downgrading of carcasses at slaughter because of airsacculitis, treatment costs, and due to its effect on flocks performance (17), and reduction of egg production in chickens, turkeys and other avian species were reported (16). MG infection mainly is transmitted through ovaries, and the MG-infected breeder flocks should be depopulated; hence, the preferred method for MG control is to maintain MG-free flocks (23). However, in some situations such as multi-age production farms, maintaining the flocks free of MG may be difficult or impossible.

Also MG infection is of high economic significance because of high morbidity and high mortality. MG infection often remains asymptomatic, however, its clinical signs include respiratory rales, coughing, sneezing, nasal discharge and frequently sinusitis, also the infection causes sub-optimal egg production in layers (16). Gross lesions of MG infection in the respiratory tract were reported previously (3, 13), and air sacculitis (6) has been described (4).

MG can be diagnosed by its different properties such as microbial culture, biochemical and serological properties (11, 16). There are two major Serological methods, which were used for screening breeder farms in Iran, Rapid Serum Plate Agglutination (RSA), and Enzyme Linked Immunosorbent Assay (ELISA); however, there were differences in sensitivity and specificity of these methods. RSA is used as the screening test because it's rapid, has high sensitivity, and low specificity, as well as being inexpensive. ELISA has been proved to have good sensitivity

and more specificity compared to RSA(15). Due to economic importance diagnosis and prophylaxis of avian mycoplasmosis have received attention, recently. According to Iranian Veterinary Organization rules control of MG is dependent on serologic screening results.

The aim of the present study was to determine the seroprevalence of *Mycoplasma gallisepticum* in Tabriz broiler breeders by RSA methods.

MATERIALS AND METHODS

In this study, 9 broiler breeder farms located in Tabriz, Iran were investigated during 2011-2012. Two of these farms (21 samples from total 110 samples) infected with *Mycoplasma gallisepticum* during study, the clinical signs and lesions were evaluated.

In live birds, 2 mL bloods were collected from wing vein by using fresh disposable plastic syringe (5 mL). The RSA test was conducted with crystal violet stained *M. gallisepticum* commercial antigen obtained from Intervet Company. One drop antigen and one drop fresh serum was placed side by side with pipette in a glass plate and mixed well by stirring with glass rod, followed by rocking. Results were read within 2 minutes. In positive cases granules were formed slowly which could be seen during rocking. In the negative case, no such granules were formed. All RSA results were recorded.

RESULTS AND DISCUSSION

Mycoplasma infections are important poultry disease that causes economic losses in poultry production, especially in broilers and broiler breeders. Purpose of this study was to investigate seroprevalence of *Mycoplasma gallisepticum* with RSA, gross lesions and clinical signs of MG in naturally infected broiler breeders.

High prevalence rate of MG infection was reported previously by several studies in broiler breeder farms (8, 18, 20).

Serological Results

Sera samples were collected during 2011-2012 years. The prevalence of MG was 19.09% in flocks that was monitored. Also the seroprevalence of MG infection was higher (25.6%) in female than in male (9.05%), which it is indicating that the female birds significantly ($p < 0.05$) were more susceptible than male birds.

The results of this study was indicated that, regardless of the screening of broiler breeder farms and control of MG, still high prevalence of MG present in broiler breeder farms. Previous studies on broiler breeder farms in Iran Also demonstrated high seroprevalence (21.4%) of MG(2, 21). Also it was reported that the prevalence of MG infection was higher (56.21%) in female than in male (43.79%)(21), our results indicated that in male chickens seroprevalence of MG is lower, but the reason of this difference in infection between male and female chickens was not distinct.

Researchers indicated that the highest prevalence of MG infection was 72.72% in 18-25 weeks age, whereas lowest prevalence was 44.00% in 66 weeks and above ages (8). Also there were similar reports, which were demonstrated highest MG infection at lower ages and lowest MG infection in later ages (19, 22). Highest infection in the young chickens, maybe due to the vertical transmission of the organisms, and lowest rate of infection in adult chickens maybe due to treatment that were used in flocks.

Clinical signs and gross lesions:

The non-infected flocks remained healthy, whereas the mycoplasma infected birds were depressed with ruffled feather, severe conjunctivitis, coughing and sneezing with nasal discharges, dyspnea with typical voices that were recorded in farm during disease period. Also infected chickens were sitting and breathing through their open mouths. These results are in agreement with previous studies in field condition and some in experimental conditions(7, 8, 12,13).

Serious involvement of trachea, lungs, air sacs, heart and liver, and catarrhal exudates in nasal passages, catarrhal and foamy exudates in the trachea were reported previously in MG infected flocks (1, 16). Congestion and hemorrhage of the trachea, dark red color appearance of Lung accompanied with congestion, and hemorrhages in complicated cases were reported (10). Accumulation of caseous in the bronchi and pneumonic areas in the lungs were reported, and Foamy Air sacculitis was also reported previously, that then become thickened and covered with caseous exudates and cloudiness (5). Although liver and heart clear in the mycoplasma infected birds, but however, in complicated infections, heart covered with fibrinopurulent, while liver was congested and showed haemorrhages. The color of the liver was slightly changed to pale and fibrinopurulent covering perihepatitis was reported(1, 9). Our

results showed *Mycoplasma gallisepticum* could cause severe gross lesions in broiler breeder, and the lesions were included: hyperemia in lungs and trachea, severe airsacculitis with caseous exudates, severe conjunctivitis, these results are in agreement with previous studies.

CONCLUSIONS

Our results indicated that *Mycoplasma gallisepticum* infection in broiler breeder is prevalent in Iran, and also it could cause severe clinical signs and gross lesions and decline broiler breeders performance. Although the results of our study in agreement with previous studies, but the lower prevalence of MG in Iran because of controlling rules that approved by Iranian Veterinary Organization. And it will be mentioned that MG positive chicks that derived from these infected flocks have low value and quality, because MG can transfer through eggs to newly hatched chickens. Additionally, it was proved that the occurrence of *Mycoplasma gallisepticum* have a relationship with the sampling year, season and ages of chickens, which should be studied more in detail.

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