

Research Article

Prevalence of *Mycoplasma Gallisepticum* (Mg) Antibodies in Chicken in Sokoto, Nigeria

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Abstract: A total of 200 sera samples were collected from local (100), broiler (50) and layer (50) chickens and subjected to Indirect Enzyme-Linked Immunosorbent Assay (ELISA). Out of these, 131 (65.5%) samples were found positive for MG infection. The prevalence of MG infection was 59% in local chickens, 56% in broiler chickens and 88% in layer chickens. The highest prevalence was recorded in layer chickens (88%) and the lowest in broiler chickens (56%). This study revealed that *Mycoplasma gallisepticum* infection is prevalent and widespread in both local, broiler and layer chickens within Sokoto metropolis.

Keywords: Mycoplasma, Chicken, Sokoto, Nigeria.

INTRODUCTION

Mycoplasmas are bacteria that lack cell wall and belong to the class mollicutes and family mycoplamataceae (Barua *et al.*, 2006 and Bradbury, 2001). Organisms which have been thought to be avian mycoplasmas were first isolated from chickens in 1935. Subsequently, several serotypes later classified as species were cultured, mostly from chickens and turkeys. However, the distribution of mycoplasmas seems to be world wide in avian species. Poultry specialists are mainly interested in avian mycoplasmas associated with diseases of domestic poultry. To date, sixteen species (*Mycoplasma gallisepticum*, *M. synoviae*, *M. meleagridis*, *M. iowae*, *M. lipofaciens*, *M. gallopavonis*, *M. gallinaceum*, *M. gallinarum*, *M. iners*, *M. pullorum*, *M. cloacale*, *M. imitans*, *Acholeplasma laidlawii*, *A.equifetale* and *Ureaplasma gallorale*) have been isolated from chickens. Infectious diseases such as avian mycoplasmosis are potential constraint to the health status and productivity of domestic chickens. Mycoplasmosis is one of the important disease problems of poultry in Nigeria, and it affects both commercial exotic breeds and indigenous breeds (Abdu *et al.*, 1983). Avian mycoplasma infection causes decreased feed efficiency, poor carcass quality and sub-optimal egg production in layer chickens, turkeys and other avian species (Hossain *et al.*, 2007).

Mycoplasma gallisepticum, *M. synoviae*, *M. meleagridis*, and *M. iowae* are the four major pathogens that causes mycoplasmosis in poultry birds (Bradbury, 2001; Evans *et al.*, 2005). Among these species, *M. gallisepticum* is the most important cause of chronic respiratory disease in chickens (Ley, 2008). Birds of all age groups are susceptible to this disease, but young birds are more prone to infection than adults (Seifi and Shirzad, 2012). *M.gallisepticum* infection causes decreased egg production in chickens, turkeys and other avian species.

MATERIALS AND METHODS

The study was conducted in Sokoto metropolis the Capital of Sokoto State which is a semi-arid region located to the extreme North-western part of Nigeria. A total of 200 blood samples (100 from local chickens, 50 from broiler chickens and 50 from layer chickens) were collected from the main live birds market in Sokoto Metropolis. Indirect enzyme-linked immunosorbent assay (ELISA) was employed to detect antibodies against MG infection.

RESULTS

From the two hundred (200) sera samples subjected to ELISA test, One hundred and thirty one (131) sera samples were found to be positive, giving an overall prevalence of 65.5%. Local chickens had a

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prevalence rate of 59% compared to the Commercial chickens (broilers and layers) with a prevalence rate of 72% (Table 1).

Within the commercial chicken group, layers had a high antibody prevalence of 88% compared to broilers with antibody prevalence of 56% (Table 2).

Table 1; Seroprevalence of Mycoplasma gallisepticum Antibodies in Chicken in Sokoto, Nigeria

Type of Chicken	Number Sampled	Number Positive	Prevalence rate (%)
Commercial Chicken	100	72	72
Local Chicken	100	59	59
Total	200	131	65.5

Table 2; Seroprevalence of Mycoplasma gallisepticum Antibodies in Commercial Chicken in Sokoto, Nigeria

Type of Chicken	Number Sampled	Number Positive	Prevalence rate (%)
Broilers	50	28	56
Layers	50	44	88
Total	100	72	72%

DISCUSSION

The highest prevalence in layer chickens recorded in the study might be due continuous (multi-age) production practice, where different age groups of layer flocks were kept in the same farm. Butcher (2002); Talha (2003) and OIE (2004) indicated that MG infection is likely to occur in multi-age production sites, which is common in layer complex and multi-age breeder sites. Previous investigations showed that MG infection represents a major problem of chickens reared in commercial poultry farms (Pradhan *et al.*, 2000; Saleque *et al.*, 2003). The current finding of MG seroprevalence in local chickens was in close agreement with the study of Chrysostome *et al* (1995) in local chickens in Benin with a prevalence of 62%.

CONCLUSION

Findings from this study revealed that *Mycoplasma gallisepticum* infection is prevalent and widespread in both local, broiler and layer chickens within Sokoto metropolis. The highest prevalence in layer chickens might be due to the stress associated with egg production and the multi-age production associated in layer flocks where infection is more likely to occur than the all-in-all-out system of production in broiler flocks and also the intensive management practice. It is therefore, suggested that the commercial layer farms should be routinely checked to monitor MG infection to prevent production losses and where large number of local chicken are kept, the reactor birds should be culled since MG organism has the potential to transmit vertically.

REFERENCES

1. Abdu, P. A. G., Bishu, A., Adysiyun, A., & Adegbeye, D. S. (1993). Survey for *Mycoplasma gallisepticum* and *Mycoplasma synoviae* antibodies in chickens in Zaria, Nigeria. *J. Anim. Prod. Res.*, 3, 63-69.
2. Baruwa, P., Pranab Baruwa, G., Bedi, R.S., Patiala, D., Behera, New Delhi; Ashish (2006)... *Mycoplasma*, Chlamydia and viruses need not be.. *J Infect* ;53:98-105.
3. Bradbury, J.M. (1998). Recovery of Mycoplasmas from birds. *Methods mol.Biol.*, 104, 45-51.
4. Butcher, G.D. (2002). *Mycoplasma gallisepticum*—A continuing problem in commercial poultry. Pages 1–2 in Publ. VM130, No. 5. University of Florida Ext. Serv., Gainesville.
5. Chrysostome, C. A. A. M., Bell, J. G., Demey, F., & Verhulst, A. (1995). Seroprevalence to three diseases in village chickens in Benin. *Prev. Vet. Med.*, 22, 257-261.
6. Evans, J. D., Leigh, S. A., Branton, S. L., Collier, S. D., Pharr, G. T., & Bearson, S. M. D. (2005). *Mycoplasma gallisepticum*: current and developing means to control the avian pathogen. *Journal of applied poultry research*, 14(4), 757-763.
7. Hossain, K. M. M., Ali, M. Y., & Haque, M. I. (2007). Seroprevalence of *Mycoplasma gallisepticum* infection in chicken in the greater Rajshahi district of Bangladesh. *Bangladesh Journal of Veterinary Medicine*, 9-14.
8. Ley, D.H. (2008). *Mycoplasma Gallisepticum* Infection. In: *Disease of Poultry*, Fadly, A.M., J.R. Gilson, L.R. McDougald, L.K. Nolan and D.E. Swaney (Edn.). 12th Edn., Iowa State University Press, Ames, Iowa, pp: 807-834.
9. OIE. (2004). Avian Mycoplasmosis, In: *Manual of diagnostic tests and vaccines for terrestrial animals*, Office International Epizooties (International organization of animal health), France. Web site: <http://www.oie.int/eng/OIE/organization/en-LR.htm>
10. Pradhan, M. A. M., Amin, M. M., & Taimur, M. J. F. (2000). A seroprevalence study of avian *Mycoplasma* in Bangladesh. Paper presented in 7th BSVER Annual scientific conference, CGVC, Chittagong, 13- 14 Nov. 2002. BSVER publication, 19-23.
11. Seifi, S., & Shirzad, M.R.. (2012). Incidence and risk factors of *Mycoplasma synoviae* infection in broiler breeder farms of Iran. *Veterinary World*. 5. 265. 10.5455/vetworld.2012.265-268.
12. Saleque, M. A., Rahman, M. H., & Hossain, M. I. (2003). Seasonal variation in the prevalence of poultry diseases in Bangladesh. Ninth BSVER publication, 24, 23-24
13. Talha, A. F. S. M. (2003). Investigation on the prevalence and significance of *M. gallisepticum* in village chickens and possibility of establishing *M. gallisepticum* free flocks and significance of *M. gallisepticum* on different production parameters in layer chickens in Bangladesh. Msc Thesis.