Detection of *Mycoplasma gallisepticum* and *Mycoplasma synoviae* antibodies in the sera of indigenous chickens by rapid serum agglutination test at Mmopane, Gaborone, Botswana

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ABSTRACT

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The mean flock size was ten chickens per rural farmer. Antibodies to *Mycoplasma gallisepticum* and *Mycoplasma synoviae* were detected in 57,88 % and 67,33 % of the chicken sera respectively.

Keywords: Botswana, indigenous chickens, mycoplasma

INTRODUCTION

Indigenous chickens are reared in most rural areas of Botswana for their meat and eggs. Chickens serve as an important source of animal protein to the rural poor in most parts of the world (Say 1987). *Mycoplasma gallisepticum* is the causal agent of chronic respiratory disease which is an economically important disease of commercial chickens (Jordan 1990). However, its prevalence in village chickens in Botswana is not known. *Mycoplasma synoviae* causes inflammation of synovial membranes resulting in inflamed tendon sheaths, foot pads and air sacs in chickens. Infected chickens are lame and show signs of respiratory disease.

This study was undertaken to detect the presence of antibodies to *M. gallisepticum and M. synoviae* in the sera of village chickens near Gaborone, Botswana. During the survey, flock sizes were also determined. Problems encountered by the poultry farmers were also investigated by a questionnaire.

MATERIALS AND METHODS

Visits were made to poultry farmers in Mmopane village which is 12 km north-west of Gaborone in order to determine the flock sizes of indigenous chickens in each homestead and to collect blood samples from them. Blood samples were collected from the brachial vein using a vacutainer tube without anticoagulant. Sera were separated, kept in sterile plastic vials in aliquots of 0,5 mℓ, and stored at 4 °C.

For the rapid serum agglutination (RSA), a drop of fresh serum was placed on a white porcelain plate and spread with a wooden applicator stick. Fresh sera were used to avoid the non specific positive reactions induced by frozen and thawed sera. A drop of commercially available *M. gallisepticum* or *M. synoviae* stained antigen (Intervet Laboratories, Boxmeer, the Netherlands) was added. The drops were mixed to make a 20 mm diameter spot. The plate was rotated gently and the test read after 2 min. Samples producing visible agglutination were considered positive. Positive and negative control antisera supplied by the manufacturer were used in each test.

RESULTS

Most of the villagers did not keep indigenous chickens for chickens were not found in many households.

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This was because the chickens had been killed by a disease outbreak. A total of 105 chickens was found. The average flock size was 10,5 ± 1,05 with a range of 6–18 (Table 1). The chickens were kept for meat and eggs for home consumption. The majority ranged freely during the day and household food scraps were provided. Drinking water was not specifically given to the chickens. None of the chicken owners used commercial chicken feed. Upon clinical examination, scaly legs due to the burrowing mite *Cnemidocoptes gallinae* were seen in a few adult birds. No vaccines for any disease entity were used in any chicken.

Antibodies to *M. gallisepticum* and *M. synoviae* were detected in 57,88 % ± 13,12 and 67,33 % ± 13,89 respectively of the chicken sera tested (Table 1).

TABLE 1 Percentage of chickens with antibodies to *M. gallisepticum* and *M. synoviae*

Homestead	*M. gallisepticum*	*M. synoviae*	Total chickens
1	100,00	100,00	10,0
2	55,50	100,00	9,0
3	100,00	100,00	12,0
4	0,00	0,00	18,0
5	0,00	0,00	12,0
6	40,00	40,00	10,0
7	75,00	100,00	8,0
8	91,66	100,00	12,0
9	16,66	33,33	6,0
10	100,00	100,00	8,0
Total	–	–	105,0
Mean ± S.E.	57,88 ± 13,12	67,33 ±13,89	10,5 ± 1,05

DISCUSSION

The flock size of 10,5 was close to that reported for rural farmers in South Africa (Dreyer, Fourie & Kok 1997). During the survey, it became clear from the questionnare, that the commonest problems encountered by the farmers included poultry diseases such as Newcastle disease and fowl pox, food shortage, predation and failure of the eggs to hatch. This could perhaps explain why the flock sizes were small.

This is the first field survey to indicate the presence of *M. gallisepticum* and *M. synoviae* antibodies in village chickens in Botswana. Our results were similar to those of Chrysostome, Bell, Demey & Verhulst (1995) who reported that 62 % of village chickens in Benin had antibodies to *M. gallisepticum.*

All the chickens we sampled appeared clinically normal and without any visible respiratory problems. The absence of clinical disease in chickens in the early stages of *M. gallisepticum* infection has been previously reported (Levisohn, Hyman, Perelman & Razin 1989) and it is not uncommon for birds with mild or inapparent clinical signs to be infected with *M. gallisepticum* (Talkington, Kleven & Brown 1985).

The significance of these findings is that mycoplasma infections may exacerbate the high mortality rate of Newcastle disease during outbreaks of this disease (Jordan 1990).

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