

SHORT COMMUNICATION

PREVALENCE OF ANTIBODIES TO CHICK EMBRYO LETHAL ORPHAN (CELO) VIRUS IN CHICKEN AND OTHER AVIAN SPECIES IN SELANGOR

SUMMARY: Precipitin antibodies against CELO virus (Phelp's strain) was detected in seven of 981 (0.7%) broilers and 41 of 2532 (1.6%) layer birds by an agar gel immunodiffusion test. The test indicated that none of the 124 wild and captive/pet birds, and 56 quail sera were positive. The prevalence rate was 1.3 per cent. It is concluded that the CELO virus infection is not widespread in poultry flocks in and around the state of Selangor.

Key words: CELO virus, poultry, serology

INTRODUCTION

Chick Embryo Lethal Orphan (CELO) virus is a serotype 1 of the avian adenovirus subgroup I (Winterfield, 1984), associated with respiratory disease and inclusion body hepatitis (Kefford *et al.*, 1980). Avian adenovirus has been previously isolated in Malaysia (Opitz *et al.*, 1979). This paper records the prevalence of precipitating antibodies to CELO virus in serum samples from flocks in and around the state of Selangor.

MATERIALS AND METHODS

Preparation of the Antigen.

A Phelp's strain of stock CELO virus was obtained from Germany*. The virus was propagated in nine-day-old fertile eggs by intra-allantoic injection at 0.1 ml of 1×10^{-3} of the stock dilution. Embryos which died in the first 48 hours post inoculation were discarded. Chorio-allantoic membranes (CAM) of the eggs at 72 hours post inoculation were harvested. CAM from dead eggs showing dwarfing and curling of the embryo were also harvested. The CAM were washed with normal saline solution, homogenised and tested for specificity using monospecific CELO virus antiserum by an agar gel diffusion test. The CAM preparation was also tested for heterologous infections against Infectious Bronchitis (IB) virus, Infectious Bursa Disease (IBD) virus and Respiratory Enteric Orphan (REO) Virus using monospecific antiserum.

Serology Test.

The Agar Gel Immunodiffusion test was carried out as described by Opitz (1978) with readings at 24, 48 and 72 hours under indirect illumination. A hyperimmune precipitating antiserum and non-homologous serum obtained from our own Minimal Disease Free (MDF) chicken flock were used as the positive and negative controls, respectively. The results were reported as either positive or negative.

* The original test antigens and control antisera were prepared in SPF chickens (VALO) and supplied by the Institute for Poultry Diseases at the Free University, Berlin, West Germany.

Serum Samples

A total of 3693 serum samples from routine diagnostic tests of poultry farms and pet-bird shops/farms in and around Selangor during the years 1985 to the middle of 1989 were submitted to the Veterinary Diagnostic Laboratory, Petaling Jaya. The serum samples comprised 981 broilers, 2532 layers, 94 crows (*Carvus m. macrorhynchos*), two black kokatoos (*Calyptorhynchus sp.*), four doves, 12 parakeets (*Loricus galgulus* and *Psittacula l. longicauda*), nine mynas (*Acridotheres t. tristis* and *Gracula religiosa*), two thrushes (*Granulax sp.*), one pigeon and 56 quails (*Cortunix japonica* and *Cortunix cocale*). A variety of clinical signs were reported, including respiratory signs, drop in egg production and a small percentage of mortality.

RESULTS

The antigen prepared produced a single and sharp line of precipitation against the monospecific CELO antiserum and no precipitation line against heterologous antisera of IBV, IBD and REO virus. Positive test sera produced a single line of precipitation while the negative control sera did not.

Of the serum samples tested, 48 (1.3%) had precipitating antibodies to CELO virus. Seven of 981 (0.7%) broiler birds and 41 of 2532 (1.6%) layers were found to be reacting to the CELO virus. None of the 124 wild and captive/pet birds, and 56 quail sera were positive to the test.

DISCUSSION

Positive reactors were first seen in broiler birds more than four weeks of age (Table 1) but were detected in younger birds below one week of age among the layers' (Table 2). The latter were believed to acquire immunity passively as the next age group, i.e. group 1-10 weeks, (Table 2) had a markedly low percentage of positive reactors. This is in agreement with Agakhan (1974) that in CELO virus induced birds, precipitin antibodies were detectable for at least 10 weeks.

The percentage rose to reach a peak of 15 percent in birds of age group 41-52 weeks old. This figure is artificially high as only 59 birds in the group were tested.

The results indicate that CELO virus infection is not widespread in poultry flocks in and around the state of Selangor. The infection did not occur among quails and in certain species of wild and captive/pet birds.

Although positive reactors were often reported with a clinical history of respiratory diseases, drop in egg production and low mortality, no definite association between CELO virus infection and disease could be demonstrated. In many cases, evidence of infection by *Mycoplasma gallisepticum*, infectious bronchitis and Newcastle disease were also concurrently reported.

TABLE 1
Prevalence of precipitating antibodies to CELO virus in broiler birds of different ages

Age (Weeks)	No. tested	No. positive	% positive
<4	373	0	0
>4	389	2	0.5
unsp	219	5	2.3
Total	981	7	0.7

unsp = unspecified

TABLE 2

Prevalence of precipitating antibodies to CELO virus in layer birds of different ages

Age (Weeks)	No. tested	No. positive	% positive
<1	62	4	6.5
1-10	764	7	0.9
11-20	239	3	1.3
21-30	240	6	2.5
31-40	140	9	6.4
41-52	59	9	15.3
>52	24	1	0.2
unsp	1004	5	2.3
Total	2532	41	1.6

unsp = unspecified

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RINGKASAN

PREVALENS ANTIBODI PADA VIRUS "CHICK EMBRYO LETHAL ORPHAN" (CELO) DALAM AYAM DAN SPECIES AVIAN LAIN

Antibodi presipitin kepada CELO virus, jenis Phelps, telah dikesan pada tujuh daripada 981 (0.7%) contoh darah ayam pedaging dan 41 dari 2532 (1.6%) ayam penelur melalui ujian immunodifusi gel agar. Tiada contoh darah dari 124 burung kurungan dan burung liar, dan 56 puyuh bertindakbalas positif kepada ujian tersebut. Kadar prevalens adalah 1.3 peratus. Adalah dirumuskan bahawa jangkitan CELO virus tidaklah meluas dikalangan ayam ternakan didalam dan sekitar negeri Selangor.