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SEROEPIDEMIOLOGICAL STUDIES ON SOME RESPIRATORY VIRUSES IN VIRUES BROILERS

(With 2 Tables)

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دراسات سيرولوجيه وبائيه على بعض الفيروسات التنفسيه فى دجاج التسمين

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تم عمل مسح سيرولوجى لعدد ١٠٠عينه من دجاج التسمين من 17 قطيع عند التسويق للأجسام المناعيه لفيروسات الربو والالتهاب الشعبى المعدى والأدينو باستعمال اختبار الترسيب فى الآجار. من النتائج اتضح أن المصل المختبر يحمل أجسام مضادة لفيروسات الربو والالتهاب الشعبى المعدى والأدينو. تراوحت نسبه الاصابه بين القطعان المختبرة فكانت 20 ٪-93 ٪ بنسبه اجماليه 65 ٪ لفيروس الربو 26 ٪ - ٩١٪ بنسبة اجمالية 61 ٪ لفيروس الالتهاب الشعبى المعدي ، 0 ٪-70٪ بنسبه إجماليه 27٪ لفيروس الأدينو. تم حساب نسبة الاصابات الثلاثيه والزوجية والفرديه للفيروسات المختبرة فكانت أعلاها هى الإصابة الزوجية بفيروس الربو مع الالتهاب الشعبى المعدى (26٪) ثم الإصابة الثلاثية (18.6٪) وأقلها الاصابة الزوجية بالربو مع الأدينو (3٪) والالتهاب الشعبى مع الأدينو (3,7). تبين من هذه الدراسة سعه انتشار الفيروسات الثلاثة بين قطعان التسمين الغير محصنه لأى من هذه الفيروسات كما أن وجود هذه الفيروسات بنسب متفاوتة يؤكد أنها قد تلعب دورا فى انقاص الوزن وبصفة خاصة العدوى الثنائية بفيروسى الربو والالتهاب الشعبى المعدى وكذا العدوى الثلاثية.

SUMMARY

One thousand serum samples were collected from both culls and normal-weight broilers at marketing from 17 different broiler flocks in Ismailia and tested for antibodies against reovirus, infectious bronchitis virus (IBV) and Adeno virus using agar gel precipitation test. Random samples were tested for *Mycoplasma gallisepticum* (MG) and *Mycoplasma synovie* (MS) using slide agglutination test. Varying prevalences of both single and mixed infection were evident among both culls and normal-weight broilers. The prevalence of single infection varied from 20%-93.8% for Reovirus with a total of 65%; 26.5-91.8% for IBV with a total of

61.4% and 0%-70% for Adeno virus with a total of 27%. The prevalence of mixed infections was also presented. The highest one was the double infection with Reovirus & IBV (26.8%) followed by the triple infection (18.6%). In contrast, double infections with Reo & Adeno and Adeno & IB showed the lowest prevalence (3% and 3.7% respectively). In conclusion, this study showed the wide spread of the three viruses and MG among broiler flocks and its role in increasing culls at marketing was discussed.

Keywords: *Seroepiidemiological studies respiratory viruses, broilers.*

INTRODUCTION

The wide spread incidence of reovirus infection among poultry flocks in Egypt was indicated by seroogical surveys reported by *BASTAMI (1977); TANTAWI et al., (1984) and AMER et al., (1986).*

Serological surveys of IBV infection in Egypt were reported by *AHMED et al. (1968); SALAMA (1976), SALEM (1979); ISMAIL et al. (1980) SHEBLE et al. (1986). MAGDA (1977)* concluded that IBV infection is prevalent among chicken flocks in Egypt.

The incidence of CELO virus infection among broilers in both Kalubia and Gharbia was reported by *AHMED (1968)* and in Dakahlia by *Ismail et al. (1980).*

The effect of combination of *Mycoplasma gallisepticum* (MG) and infectious bronchitis virus (IBV) {Mass, Beaudette and H 120 virus strains} on body weight was recorded and showed highly significant differences attributable to possibility of all combinations *(ELSHATER, 1986).*

On this study, serological testing of Culls and normal-weight broilers for Reovirus, IBV and Adeno virus precipitins as well as *Mycoplasma gallisepticum* (MG) and *Mycoplasma synovie* (MS) agglutinins was carried out.

MATERIAL and METHODS

Serum samples:

Atotal of one thousand serum samples were collected as follow: 800 samples from culls (≤0.5 Kg at marketing) in 17 broiler flocks. From the flocks numbered 13-17, 200 samples were collected from normal-weight broilers (≥1.5 Kg at marketing).

Agar gel precipitation test (AGPT):

The test was conducted as described by *OLSON and WEISS (1972).* The plates were incubated at 37 °C and observed for lines in 24 and 48 hours. Precipitating antigens and standard antisera for reovirus (s-1133), IBV and CELO were obtained from SPAFAS, USA.

Slide agglutination test:

Random samples from each flock were tested for MG and MS agglutinins. Sera were used directly after collection. Stained antigen for MG and MS were obtained from Intervet.

RESULTS

Results of AGPT:

Results were presented in both table 1and table 2. Table1 1 showed the prevalence of single infection among both culls and normal weight broilers while table 2 showed the prevalence of mixed infection.

Results of slide agglutination test:

Tested samples showed 100% positive to MG.

DISCUSSION

Our results showed higher prevalence of reovirus infection among broilers in Ismailia as shown in table 1 (varied from 20% to 93.8% with a total of 65% among culls and 68.5% among normal-weight) Than those reported by *BASTAMI (1977) and AMER et al. (1986)* who reported a prevalence of 44.1% and 18.33% respectively.

AHMED et al., (1968) reported that the prevalence of precipitin against IBV varied from one province to another. The lowest value (2%) was in Kalubia and the highest value (35.1%) was in Sharkia with an average of 11% for 11 provinces tested. Later on *SALAMA (1976)* demonstrated 11.86 reactors against IBV in Sharkia and *ISMAIL (1980)* showed 15.75% in Dakahlia.

Our study showed variation in the prevalence of IBV antibodies between different flocks (6.7%- 94.7%) with a total prevalence of 61.4 among culls and 63.5 among normal-weight broilers.

In contrast, this study showed a lower prevalence of Adeno virus antibodies (Varied from 0%-70% among different flocks with a total of 27% among culls and 24.5% among normal-weight broilers) in comparison to reovirus and IBV.

AHMED (1968) reported that the incidence of CELO infection varied between 4% in Kalubia and 38% in Gharbia, while *ISMAIL et al. (1980)* reported that the incidence of CELO infection in Dakahlia is 5.62%.

Comparing our results with those of the previous workers indicated a progressive increase in the spread of infection of the 3 viruses among and within broiler flocks.

In a trial to analyze the prevalence of various combinations of the 3 viruses under investigation, the results were summarized in table 2. Double infection with Reovirus & IBV revealed higher prevalence (varied from 2%- 71.5% with a total of 26.8% among culls and 32% among normal-weight broilers) followed by the triple infection (varied from 0%-65.2% with a total of 18.6% among culls and 18% among normal-weight). In contrast, Double infection with Reo & Adeno showed lower prevalence (varied from 0%-15.2% with a total of 3.5% among culls and 3% among normal-weight) followed by IBV &Adeno virus (varied from 0%-8.6% with a total of 3.1% among culls and 2% among normal-weight).

These variation in the reactors for the three viruses among culls indicated that, none of them alone is responsible for increasing the number

of culls. Although, the higher prevalence of some combinations might play some role in this respect. The presence of MG agglutinins in 100% of tested serum samples declare its important role in increasing the number of culls.

The effect of MG in combination with different strains of IBV on body weight was recorded and showed highly significant differences attributable to possibility of all combinations by *ELSHATER (1986).*

Comparing the results for both culls and normal-weight broilers indicated some differences but it was unstable and not in the same line. So, we can count it as a factor in increasing the number of culls and might be atttributable to a variation in the immune response or response or resistance among birds.

In conclusion, the wide spread of MG (100%), reovirus and IBV among broiler flocks is confirmed by this study. There is some sort of interaction between the 3 viruses as well as MG in increasing culls at marketing. The role of parvovirus, calcivirus, enterovirus and other viruses in the occurrence of this phenomenon could not be neglected and need further investigation.

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Table 1: Results of AGPT for single infection with some respiratory viruses among examined broiler flocks at marketing:

Flock No.	Health status	No. of samples	Reo		IB		Adeno	
			No.	%	No.	%	No.	%
1	C*	40	25	62.5	13	32.5	00	00.0
2	C	32	30	93.8	23	71.9	04	12.5
3	C	40	29	72.5	25	62.5	10	25.0
4	C	46	35	76.1	12	26.1	16	34.7
5	C	60	45	75.0	44	73.3	11	18.3
6	C	70	37	52.9	56	80.0	20	28.5
7	C	40	28	70.0	25	62.5	11	27.5
8	C	46	20	43.5	13	28.3	00	00.0
9	C	50	29	58.0	44	88.0	35	70.0
10	C	49	47	95.9	45	91.8	27	55.1
11	C	49	14	28.6	13	26.5	04	08.2
12	C	50	10	20.0	28	56.0	02	04.0
13	C	49	29	59.2	12	24.5	09	18.4
13	N&	45	25	55.5	03	06.7	07	15.5
14	C	50	36	72.0	42	84.0	15	30.0
14	N	44	24	54.5	31	70.5	00	00.0
15	C	30	25	83.3	28	93.3	17	56.7
15	N	38	34	89.5	36	94.7	09	23.7
16	C	55	43	78.2	36	65.4	02	03.6
16	N	27	19	70.4	16	59.3	00	00.0
17	C	44	38	86.4	32	72.7	33	75.0
17	N	46	35	76.1	41	89.1	33	71.7
Total	C	800	520	65.0	491	61.4	216	27.0
	N	200	137	68.5	127	63.5	049	24.5

* C = Culls: Body weight ≤ 500 Gram at marketing.
& N = Normal: Body weight ≥ 1500 Gram at marketing.

Table 2: Results of AGP tests for mixed infection with some avian respiratory viruses among broiler flocks at marketing:

Flock No.	Health status	No	Reo & IB		Reo & Adeno		Adeno & IB		Triple infect.	
			No.	%	No.	%	No	%	No.	%
1	C*	40	10	25.0	00	00.0	00	00.0	00	00.0
2	C	32	17	53.1	00	00.0	00	00.0	04	12.5
3	C	40	18	45.0	02	05.0	02	05.0	05	12.5
4	C	46	07	15.2	07	15.2	00	00.0	06	13.0
5	C	60	25	62.5	00	00.0	01	01.7	10	16.7
6	C	70	22	31.4	01	01.4	06	08.6	11	15.7
7	C	40	14	35.0	02	05.0	01	02.5	08	20.0
8	C	46	09	19.6	00	00.0	00	00.0	00	00.0
9	C	50	02	04.0	02	04.0	10	20.0	23	46.0
10	C	49	19	38.8	02	04.1	01	02.0	24	49.0
11	C	49	01	02.0	02	04.1	00	00.0	00	00.0
12	C	50	06	12.0	00	00.0	00	00.0	00	00.0
13	C	49	09	18.4	03	06.1	00	00.0	03	06.1
13	N*	45	03	06.7	04	08.9	00	00.0	00	00.0
14	C	50	20	40.0	02	04.0	02	04.0	10	20.0
14	N	44	20	45.5	00	00.0	00	00.0	00	00.0
15	C	30	08	26.6	00	00.0	01	03.3	16	53.3
15	N	38	27	71.5	01	02.6	02	05.3	06	15.8
16	C	55	25	45.5	01	01.8	00	00.0	01	01.8
16	N	27	10	37.0	00	00.0	00	00.0	00	00.0
17	C	44	02	04.5	04	09.1	01	02.3	28	63.6
17	N	46	04	08.7	01	02.2	02	04.3	30	65.2
Total	C	800	214	26.8	28	03.5	25	03.1	149	18.6
	N	200	064	32.0	06	03.0	04	02.0	36	18.0