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**DETERMINATION OF MATERNAL IMMUNITY AGAINST INFECTIOUS
BURSAL DISEASE IN BROILER CHICKS**
(With One Table)

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قياس مستوى الأجسام المناعية المكتسبة من الإمهات ضد مرض
التهاب غدة فابريشيا المعدى في فروج اللحم

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استخدم في هذه الدراسة أفراخ لحم سلالتين الأولى اجنبية والثانية محلية، وامهاتهم
ملقحة سابقا وبعمر (18 اسبوع)، باللقاح الزيتي غير الفعال للتهاب غدة فابريشيا
المعدى. لوحظ وجود الأجسام المناعية المكتسبة من الأمهات منذ اليوم الأول بعد الفقس في
أفراخ كلا السلالتين. واستمر ظهور هذه الأجسام المناعية حتى اليوم الـ (18) بعد الفقس
بالنسبة لأفراخ السلالة الأجنبية وكان معيار تلك الأجسام المناعية قد تراوح بين $0.4/0.1$
 \log_{10} الى $1.8/0.1 \text{ ml}$. أما بالنسبة لأفراخ السلالة المحلية فقد كان
معيار تلك الأجسام مشابه لمعيارها في أفراخ السلالة الأجنبية واستمر ملاحظة الأجسام
المناعية لغاية اليوم الرابع عشر بعد الفقس.

SUMMARY

Maternal immunity against infectious bursal disease (IBD) in broiler chicks was determined by agar gel diffusion (AGD) technique. The chicks used in this study were of two breeds; Foreign breed and local Iraqi breed. The chicks were hatched from eggs derived from dams previously vaccinated at 18 weeks of age by inactivated oil emulsion IBD vaccine.

The results indicated that the maternal immunity was found on the first day of life in both the breeds. In the first group (Foreign breed) the immunity lasted for 18 days post hatching (DPH) with a titre ranging between $\log_{10} 0.4/0.1 \text{ ml}$ to $\log_{10} 1.8/0.1 \text{ ml}$. In the second group (Local breed) the antibody titre were the same like in the first group but the immunity lasted for 14 DPH.

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INTRODUCTION

HITCHNER, 1970; LUCIO and HITCHNER, 1979 and GIAMBRONE, et al. 1982 found that the maternal antibodies protect the young chicks against infectious bursal till the end of first week of life.

On the other hand, WYETH and CULLEN, 1976; WINTERFIELD and THACKER, 1978; MUSKETT, et al. 1979 and WOOD, et al. 1981 stated that the maternal immunity may interfere with active immunization with modified live infectious bursal disease vaccine.

Moreover, WYETH and CULLEN, 1978; LUCIO and HITCHNER, 1979 and GIAMBRONE, et al. 1982 observed that the vaccination and revaccination of adult breeders with an inactive oil emulsion IBD vaccine may produces stronger and longer immunity in progeny flocks and has no detrimental effect on the reproductive life of the breeders.

Many techniques may be adopted for determination of maternal immunity against IBD. WYETH and CULLEN, 1976 and WEISMAN and HITCHNER, 1978 used the agar gel precipitation test for detection of maternal immunity and serological response to IBD Virus.

This study was conducted to determine the level of passive antibodies in two breeds of chicks whose parents were vaccinated with inactivated oil emulsion IBD vaccine.

MATERIAL and METHODS

Chicks:

210 broiler chicks were used in this study. The chicks were of two breeds. The two breeds constitute two equal groups. The group 1 was of foreign breed and group 2 was of local Iraqi breed. The dams of those chicks were vaccinated at 18 weeks of age with inactivated oil emulsion IBD vaccine (TALOVAC 301 ND/IB/IBD, TAD pharmazeutisches werk, GmbH, W. Germany). The two groups were housed in isolating room till the end of the experiment.

Serum assay:

Four serum samples were collected from each group daily and pooled. The collection of serum was started since the first day post hatching till 21 days of age.

Sera samples were diluted in four fold dilutions and exposed to vaccinal strain of the IBD virus (TAD Gumborovac., TAD pharmazeutisches werk, GmbH., W. Germany). Agar gel diffusion technique was used in this study according to the general procedure of WOERNILE (1959). The antibody titres were calculated according to REED and MUENCH (1938).

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Histopathology:

Bursae were removed at 10th and 21 DPH from 15 birds in each group. The specimens were examined macroscopically and then fixed in 10% formaline, sectioned, stained with haematoxylin and eosin and examined microscopically for detection of any subclinical infection with the IBD virus.

RESULTS

The results obtained in this study showed, that the chicks hatched from dams previously vaccinated with oil emulsion IBD vaccine, having a suitable maternal immunity. This immunity lasted to valuable period of time. These level and period were more or less enough for protection of the chicks against the viral infection especially during early life.

Table 1, showed that the period of immunity in the foreign breed (group 1) was 18 days, while it was 14 days in the local breed (group 2). The immunity titres were nearly similar in both groups and it were ranged between $\log_{10} 1.8/0.1$ ml to $\log_{10} 0.4/0.1$ ml.

The pathological examination of collected bursa indicated a normal macro and microscopic picture. The bursa were free from any enlargement, petechial or echymotic haemorrhages and the longitudinal striations of the inner surface were normal and white in colour. The microscopic examination exhibited a large active follicles consisted of lymphoid cells that form discrete follicles with little interfollicular tissue. Covering epithelium was simple columnar. These results showed that the two groups were free from subclinical infection with IBD.

DISCUSSION

The problem of infectious bursal disease is restricted in the infection of the bursa of Fabricius by IBD virus. This infection leads to immunosuppression in infected birds. This statement is true since ALLAN, *et al.* (1972).

The immunity against the disease is very important to protect the bird against the IBD virus infection and for preservation of the normal biological immune response against many other infections.

The results of the present study showed that the passive immunity was detected since the first day of life and lasted to suitable period and with acceptable titres of antibodies.

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In case of group 1 the maternal immunity lasted for 18 days, but the true immunity started to decrease on 7th DPH (Table 1). The passive immunity in group 2 was not different from group 1. The only difference was in duration of the curve (14DPH). The suitable titres of antibodies stopped on 7th day and the curve started to decline till it reached zero.

From the results achieved it is clear that the vaccination of dams with inactivated oil emulsion IBD vaccine leads to protection of their progeny at least for the first week of life against the IBD virus infection. These results are in agreement with those recorded by WYETH and CULLEN, 1976, 1978; LUCIO and HITCHNER, 1979 and GIAMBRON, et al. 1982 and disagree with the study of BAXENDALE (1976) who stated that the passive immunity in chicks lasted for more than five weeks of life.

The histopathological study and due to the immunity curves it was clear that the experimental chicks were free from subclinical IBD infection. This means that the obtained immunity was due to parental vaccination and not due to early infection with IBD virus.

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Table 1 : Determination of maternal antibodies against IBD in broiler chicks by agar gel diffusion test.

DAYS POST HATCHING	Serum titres (Log ₁₀ /0.1 ml)	
	Foreign breed(1)	Local breed (2)
1	1.8	1.8
2	1.8	1.8
3	1.8	1.8
4	1.6	1.8
5	1.4	1.4
6	1.4	1.4
7	1.4	1.4
8	1.2	1.2
9	1.2	1.2
10	1.2	1.2
11	1.2	0.8
12	1.2	0.6
13	0.8	0.4
14	0.8	0.4
15	0.6	0
16	0.6	0
17	0.6	0
18	0.4	0
19	0	0
20	0	0
21	0	0