

SOME STUDIES ON E. COLI IN QUAILS

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ABSTRACT

A great attention in Egypt was payed towards quail production during few last decades for meat of good quality. *E. coli* is one of quail mortalities. 100 samples were randomly collected at different ages for bacteriological investigation. 35 isolates (35%) were obtained. The seriological identification showed that 5 isolates were (O55), 5 isolates were (O119), 10 strains were (O78) and 15 strains were untyped. The antibiotic sensitivity pattern of *E. coli* in vitro by antibiotic discs, revealed that lincospectin, enrofloxacin, doxycyclin, gentamycin, florafinicol, colistin and amoxicillin were (94.3%), (88.6%), (85.7%), (85.7%), (71.4%), (34.3%) and (14.3%) respectively.

INTRODUCTION

Quail meat has many advantages and superiority compared with the other species of poultry.

Amino acids compositions were varied from 82.6 to 95.2g/100g protein in thigh and breast wild quails (El-Dengawy and Nassar, 2001). So quails meals are considered to be high protein content with biological value and good taste, also have very low cholesterol content.

E. coli has been associated entirely or partially with many poultry disease which include: Colibacillosis, peritonitis, synositis, omphalitis and air sac diseases which may causes major economic losses to the poultry industry (Verma and Adlakha 1971).

So this study was planned as an attempt to :

- (1) Isolation and identification of *E. coli* in quail.
- (2) Antibiotic sensitivity test to obtained isolate of *E. coli*.
- (3) Pathogenicity of *E. coli* to 7 days old quails.

MATERIAL AND METHODS

(I) Material:

(1) Birds:

A total 100 quail were collected from different farms at different ages as show in table (1).

Such birds showed anorexia and ruffled feathers were collected for *E. coli* isolate that may cause such condition.

From these birds, bacteriological swabs were directly taken from heart blood, liver and lungs such samples were subjected to bacteriological examination to isolate causative *E. coli*.

(2) Media used for isolation and identification (Cruickshank et al., 1975):

- (a) Nutrient and slope agar.
- (b) MacConkey's agar.
- (c) Sugar media.
- (d) Peptone water media.
- (e) Urea agar.
- (f) Semisolid nutrient agar.

(3) Solution and reagent according to Cruickshank et al., (1975).

(II) Methods:

(1) Isolation and biochemical identification, were carried out for the bacteriological identification according to Cruickshank et al., (1975).

(2) Serological identification: according to Edward and Ewing, (1964).

(3) Sensitivity to antibiotic: according to Bauer et al., (1966).

(4) Pathogenicity of *E. coli* to 7 days old quails:

Quails classified into 4 equal subgroups. The first group kept as control, the 2nd group was inoculated orally with 1ml (10^9) of *E. coli* and did not treatment. 3rd group were inoculated of as 2nd group and treated with lincospectin 0.5g/litre for 3 days and 4th group were inoculate of with 1ml (10^9) of *E. coli* and treated with lincospectin 5g/L for 5 successive days. The mortality, morbidity, symptoms and postmortem were recorded. Liver, lung, heart blood from dead quails was cultured.

RESULTS

The obtained data revealed that 35 isolates were *E. coli* with the incidence percentage of 35%. It was illustrated in table (2).

Hundred quail samples were collected according to different ages as in table (3), (40) collected samples at age 1 - 10 days, (30) at age 11 - 30 days and (30) at ages above 30 days.

The incidence percentage of *E. coli* at different ages recorded that the highest percentage was observed at the age of 1 - 10 days was 40% and the lowest one age of before and above 30 days was 30%.

Identification of the isolates:

The colonies characters on agar media usually unpigmented and circular in out line on MacConkey agar media. colonies appear as pink coloured due to fermentation of lactose and production of gas.

Biochemical identification:

Sucrose differ

Serological identification:

The results summarized in table (4) revealed that 20 strains were typed and 15 untyped.

The antibiotic sensitivity:

The result summarized in table (5).

Pathogenicity:

Results of pathogenicity test summarized in table (6).

DISCUSSION

Quail meat and eggs are considered to be one of main sources of protein of high biological value. Such birds suffered from common poultry diseases. Thus the aim of this work is to investigate the methods used for the characterization of *E. coli* as causes of quail mortality.

One hundred quails were collected at different ages from different localities. The obtained data revealed that 35 sample yielded *E. coli*, 35%. These results agreed with reported by Verma and Adlakha (1971) isolated 10^8 strains of *E. coli* from 359 chicken (30.03%).

Also, Ghosh (1987) who proved that the incidence of percentage of *E. coli* in chicken was 37% and the most prevalent serotypes were O61, O143, O147 and O119.

On the other hand there was a gap between the obtained findings and the reported by Bert (1962) who mentioned that *E. coli* was isolated from 13.3% of the examined chicks.

With regard to serological typing of the isolates indicated that 20 serotypes of *E. coli* were (O55, O119 and O78) out of 35 isolates 5 (14.2%) were O55; 5 (14.2%) were O119 and 10 (28.4%) were O78 while 15 (43%) isolated were untyped as Bozargmachi et al., (1980) isolated *E. coli* and

recoded that the registered serotype were 078 and 0119. Also Medani et al., (2007) obtained 7 serotypes of *E. coli* (02, 08, 078, 015, 027, 0124 and 035) whereas 29 were untyped.

E. coli susceptibility was tested in vitro against commonly used chemotherapeutic discs, viz: amoxicillin, colistin, dextrocyclin, enrofloxacin, florafincol, gentamycin and lincospectin to choose the highly potent one to eliminate the death using antibiotic of choice. Concerning the antibiotic sensitivity of *E. coli* strain Lincospectin was superior in its action 33 strain were sensitive (94.3%) followed by enrofloxacin gentamycin, doxycelline, floraphencol, colestin and amoxicillin with activity percentage 88.6, 85.7%, 85.7%, 71.4%, 34.3% and 14.3% respectively.

These result agreed with the result reported with Stephens and Lakhotia (1973).

Inoculation of *E. coli* isolates to 7 days old quails showed the clinical signs, postmortem findings confined to pneumonia, enteritis and enlarged liver with mortality reached 50%, 7 day post-infection. These result were in agreement with results of Medani et al., (2007).

In conclusion, *E. coli* infection causes large economic losses in quails as high morbidity and high mortalities so it needs control in quails.

Table (1): Samples of quail, collected at various localities.

<i>District</i>	<i>No. of quail sample</i>	<i>1-20 day</i>	<i>20 and above</i>
Minia El-Kameh	24	12	12
Bilbais	46	23	23
Kanayate	10	5	5
Abohamad	20	10	10
Total	100	50	50

Table (2): The distribution of *E. coli* isolates according to location.

Locality	Number isolates	1-20 day	21 & above
Meneal Kameh	8	5	3
Belbais	12	8	4
Kanayat	5	4	1
Abohamad	10	8	2
Total	35	25	10

Table (3): Illustrate the result of biochemical identification

Test	Results
Motility	+ ve
Indol	+ ve
M.R.	+ ve
V.P.	- ve
S.C.	- ve
H ₂ S on TSI	- ve
Urea	- ve
Glucose acid production	+ ve
Manitol gas production	+ ve
Malose	+ve
Maltose	+ ve
Xylose	+ ve
Arabinose	+ ve
Sucrose	differ

Table (4): the number and percentage of serotyped *E. coli*

<i>Serological</i>	<i>055</i>		<i>0119</i>		<i>078</i>		<i>untyped</i>	
	No.	%	No.	%	No.	%	No.	%
<i>No. of isolate</i>								
35	5	14.3	5	14.3	10	28.5	15	41.3

Table (5): Antibiotics sensitivity test for isolates *E. coli* (35 isolates).

<i>Chemotherapeutic</i>	<i>Disk Conc.</i>	<i>Standard zone of inhibition</i>	<i>No. of sensitive stains</i>	<i>% of activity</i>
Lincospectin	50 – 100ug	15	33	94.3
Enrofloxacin	5ug	22	31	88.6
Gentamycin	10ug	15	30	85.7
Doxycyclin	30ug	18	30	85.7
Florafinicol	30ug	18	25	71.4
Colstin	25ug	11	12	34.3
Amoxicillin	25ug	19	5	14.3

Table (6): Results of oral infection with *E. coli* in 7 days old quails

<i>Group No.</i>	<i>Number of birds</i>	<i>Symptoms</i>	<i>Lesion</i>	<i>Dead birds</i>	<i>Reisolation</i>
Group (A) (Control)	25	-	-	-	-
Group (B) (Infected)	25	20/25	20/25	13/25	5/5
Group (C) Infected and treated	25	5/25	5/25	0/25	2/5
Group (D) (Infected and treated for 5 days)	25	5/25	2/25	0/25	1/5

REFERENCES

- Bauer, A.; Kirby, Y.; Sherris, M. and Tenckhoff, O. (1966) : Disc diffusion technique of the antibiotics sensitivity test. *Am. J. Clin. Path.* 53: 149-158.
- Bert, M. (1962) : Induced *E. coli* infection in baby chicks. *J.A.V.M.A.*, 140: June (1): 1191.
- Bozorgmehr, O.; Fard, M. A. and Gilani, S. N. (1980) : Survey of colibacillosis in chicken flocks in Tahrán. *J. Vet. Fac. Tahrán*, 35 (3/4): 109-122.
- Cruickshank, R.; Duguid, J. P.; Marmion, B. P. and Swain, R. H. A. (1975) : *Medical Microbiology*. 12th Ed. Vol. 11. Churchill Livingstone, Edinburgh, London and New York.
- Edward, P. R. and Ewing, W. H. (1964) : *Identification of enterobacteriaceae*. 2nd Ed. Burgess Publishing Company.
- El-Dengawy R. A. and Nasser A. M. (2001) : Investigation on the nutritive value and microbiological quality of wild quail carcasses. *Nahrung* 45(1): 50-54.
- Ghosh S. S. (1987) : Occurrence of *E. coli* serotypes in chickens in England. *Ind. Vet. J.* 64 (6): 446-466.
- Medani, G.; Mostafa, M.; Amin, A.; Sohair, S. and Helal, L. (2007) : Studies on some bacterial isolates affecting quails. *SCVMJ*, XI (1), 2007.
- Stephens, J. F. and Lakhotia, R. L. (1973) : Drug resistant bacteria from Ohio hatching eggs. *Home Economics and Natural Resources* 58 (1): 23-25.
- Verma, K. C. and Adlakha, S. C. (1971) : *E. coli* and other enterobacteriaceae group of the organisms from different pathological condition in poultry. *Ind. Vet. J.* 48: 107 - 106.

الملخص العربي بعض الدراسات عن الإشيريشيا القولونية فى السمان

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إلجهد الأنظار فى ج. م. ع منذ عدة عقود مضت إلى تربية السمان باعتبارها مصدراً هاماً لللحم المرتفعة فى قيمتها الغذائية ولذا فقد تم التخطيط لهذا الدراسة بفرض إلقاء الضوء على ما يلى :

- (١) عزل وتوصيف الميكروب القولونى المعزول من السمان.
- (٢) دراسة الصفات البيولوجية لهذا الميكروب بفرض توصيفه.
- (٣) دراسة نموذج حساسية هذا الميكروب لمضادات الحساسية المختلفة معملياً.

وعليه تم تجميع ١٠٠ عينة سمان من مختلف الأعمار وأجرى الفحص وتم عزل ميكروب *E. coli* من ٣٥ عينة من إجمالي ١٠٠ عينة بنسبة الواحد ٣٥٪.

وعند إجراء تجارب التحديد السيرولوجى لهذه الميكروبات وجد ٥ عترات 055 ر ٥ عترات تنتمي للفرع السيرولوجى (0719) ر (١٠) عترات تنتمي للفرع السيرولوجى 078 وعدد ١٥ عينة من ٣٥ عينة لم تعرف.

وقد أوضح نموذج إختبار الحساسية لهذا الميكروب *E. coli* بالمعمل باستخدام أتراس المضادات الحبرية وجد أن أكثر الأتراس حساسية للبنكريسين ثم الاتروفلركساسين ثم الجنتاميسين ثم الدوكسيسيلين.