

# ISOLATION OF CLOSTRIDIUM SPECIES FROM GEESE AND THEIR SUSCEPTIBILITY TO ANTIBACTERIAL AGENTS IN ASSIUT GOVERNORATE

(With 6 Tables)

By

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عزل ميكروبات الكلوسترديوم من الإوز وتأثير المضادات الحيوية عليه  
بمحافظة أسيوط

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أجريت الدراسة على عدد ٢٠٠ أوز ٢٠ منها سايم ظاهريا و ١٢٠ تعاني من اسهالات و ٦٠ ناقق حديثا من محافظة أسيوط. تم أخذ عينات من أمعاء وكبد وطحال للفحص البكتريولوجي لميكروب الكلوسترديوم. أوضحت الخواص المورفولوجية والتفاعلات البيوكيميائية عزل ١٣٠ عترة من الكلوسترديوم من جميع العينات بنسبة (٦٥%) منها ٧٤ عترة كلوستريديم بيرفرنجينز بنسبة (٦٥,٩%) و ٢٦ عترة كلوستريديم سبوروجينس بنسبة (٢٠,٧%) و ١٩ عترة كلوستريديم كولنيم بنسبة (١٤,٦%) و ١١ عترة كلوستريديم سورديللي بنسبة (٨,٥%)، أوضحت الاختبارات البيولوجية عزل ٩ عترات غير ضارية بنسبة (١٢,٢%) و ٦٥ عترة ضارية من ميكروب كلوستريديم بيرفرنجينز بنسبة (٨٧,٨%) حيث كان النوع (ا) أكثرهم تواجدا بنسبة (٧٢,٣%) بينما كانت نسبة النوع (ج) والنوع (د) (١٩,٥%) و (٩,٣%) على التوالي، بفحص ضراوة بعض العترات المعزولة على الأوز بالعدوى عن طريق الفم عند عمر ١٥ يوم حيث تراوح نسبة النفوق ٢٠% الى ٦٠% وعند عمر ٤٥ يوم ٥٠% الى ٤٠% وبالحقن العضلي عند عمر ١٥ يوم و ٤٥ يوم كانت نسبة النفوق مرتفعة في الأوز المحقون بكلوستريديم بيرفرنجينز نوع (ا) حيث بلغت نسبته ١٠٠% و ٨٠% على التوالي بينما الأنواع الأخرى تراوحت بين ٢٠% الى ٨٠%. وقد تم تسجيل الأعراض الإكلينيكية والآفات التشريحية ومحاولة عزل الميكروب مرة ثانية من الأعضاء الداخلية. وتم عمل اختبار حساسية لميكروبات الكلوسترديوم المعزولة باستخدام المضادات الحيوية المختلفة والتي ثبت فعاليتها لكل من البنسيلين و امبسلين والاموكسيلين والكلورامينفينوكول بينما كانت مقاومة لكل من ستربتومايسين والجنتاميسين والنتراسيكلين. ويتضح من خلال هذه الدراسة أن العترات الضارية من ميكروبات الكلوسترديوم لها دور كبير في إصابة الإوز بالاضطرابات المعوية والنفوق.

## SUMMARY

A total of 200 geese (20 apparently healthy, 120 diarrhotic geese and 60 freshly dead) collected from privately owned at Assiut province were subjected to post-mortem and bacteriological examination for the prevalence of clostridia microorganisms in geese. There are variation in the prevalence rate of clostridium species isolated from apparently healthy geese which lower than of diarrhotic geese and freshly dead & slaughtered. It was found 6 (30%) in apparent healthy, 80 (66.7%) in diseased geese, while was 44 (73.3%) in dead geese According to morphological characters and biochemical reactions, 130 clostridium isolates were successfully isolated with an incidence of 65%. The most important isolates was *C. perfringens* with incidence of 74 (56.9%) followed by *C. sporogenes* was 26 (20.7%), *C.colinum* was 19 (14.6%) and *C. sordelli* was 11 (8.5%). For the typing of *C perfringens* isolated, type "A" was the most prevalent with incidence of (72.3%) followed by type "C" with incidence of (18.5%) and type "D: with incidence of (9.3%). Tow age groups of geese (15 and 45-day old) were used to test the pathogenicity of *C.perfringens* type "A", *C. sporogenes*, *C.colinum* and *C. sordelli*. The mortality in geese at 15-day old through oral administration of *C.perfringens* type "A", *C. sporogenes*, *C.colinum* and *C. sordelli* were 60%, 40%, 20% and 20% respectively while were 100%, 80%, 60% and 20% respectively through I/M inoculation and the mortality rate in geese at 45-day old through oral administration were 40%, 20%, 0.0% and 0.0% while were 80%, 40%, 20% and 0.0% respectively through I/M inoculation. Sensitivity test of Clostridia strain isolates against some antibiotics in vitro showed that, Penicillin, Ampicillin, Amoxicillin, and Chloramephenical were highly sensitivity, while Lincomycin, Norfloxacin and Kanamycin were moderate and were resistant to Streptomycin, Gentamycin Tetracycline and Nalidixic acid.

*Key words: Geese, clostridium*

## INTRODUCTION

Recently clostridium appeared to be of high significance among poultry all-over the world, and constitute one of the most important veterinary problems that face poultry industry in many countries including Egypt. The nature of its pathology in birds suggests a toxigenic mechanism, but testing of culture supernatant in laboratory animals has no effect. Necrotic enteritis first reported by Parish (1961)

where it is a sporadic but considered as an important disease of boiler. Hussein (1972) isolated 225 clostridia isolates from 477 samples of intestinal tract from dead birds with incidence of (71%) and apparently normal ones with incidence of (24%). Out of them, 183 *C.perfringens* type A, 41 were type C, one was type D while *C.sporogenes* was isolated from 3 cases. Ibrahim (1979) succeeded in isolation of clostridia from the small intestinal of diseased birds in higher incidence (38.1%) than from normal chickens (19.3%). Botulism is a sporadically occurring disease of both wild and domestic birds Smith (1977). Neumann (1983) recorded sever losses in wild ducks due to enterotoxaemia. Wobeser and Rainine (1987) found *C.perifringens* in large numbers in the intestines of geese suffering from a disease characterized by severe necrotic enteritis. Necrotic enteritis is the disease accompanied with sever fatal diarrhea due to the production of exotoxins produced by clostridium microorganisms and mortality rates have ranged from 1 to 60% (Baba *et al.*, 1992). Leighton *et al.* (1990) and Gardner (1992) mentioned that the role of clostridia organisms in duck were restricted to botulism caused by *C. botulinum* type C toxin which causes high losses in water fowl all over the world. Songer (1996) reported that *C. colinum* is the aetiological agent of acute or chronic ulcerative enteritis of wild brides, quail and domestic fowl. Saad *et al.* (1997) isolated *C.perifringens* type A, C and D, *C.sporogenes*, *C.sordelli* and *C.bifermentans* from both apparently and diseased duck. Abdel-El-Twab (2002) who isolated *C.perifringens*, *C.sordelli* and *C.sporogenes* from liver, intestine, kidney and spleen of apparently and diseased duck and geese.

The aim of this study through light on the incidence of clostridium species in geese and its sensitivity to some antibiotics.

## **MATERIALS and METHODS**

### **Materials:**

#### **1- Samples:**

A total of 200 geese at different ages (60 freshly dead diarrhoeic geese and 120 geese suffered from diarrhoea, addition 20 apparently healthy) were collected from different sources in Assiut Province to detect the prevalence and pathogenicity of *Clostridium* Spp. in diarrhoeic geese. Three samples were collocated (intestinal content, liver and spleen) from each bird.

#### **2- Culture media:**

a - Cooked meat medium "Mast DM 120"

b- Neomycin blood agar medium (neomycin sulphate solution) was added to the media just before the additions of blood to make final concentration of 150ug/ml.

c- Thioglycollate broth medium (Oxoid, GM10)

d- Egg yolk agar media according to Levett (1991)

e- Medium for toxin production of *C.perfringens* recommended by Roberts *et al.* (1970)

f- Antiserum "Burrough, Wellcome, Beckenham, London, England"

RPO4	Cl-perfringens	type A	K	476810
RPO5	Cl-perfringens	type B	K	454010
RPO6	Cl-perfringens	type C	K	354610
RPO7	Cl-perfringens	type D	K	447710
RPO8	Cl-perfringens	type E	K	449710
RPO9	Cl-perfringens	type control	K	447910

g- Fermentable tests: according to (Levett, 1991).

h- Experimental laboratory animals:

**1- Albino guinea-pig:**

Albino guinea-pig with an average weight of 200-300gm were used in dermo-necrotic reaction for typing of isolated *C. perfringens* The animals were kept under observation for 2weeks before the beginning of inoculation.

**2-Swiss mice:**

Mice with an average weight (25-30gm) were used for the detection of toxin of *C.perfringens*. They were kept under observation for 2weeks before they were inoculated.

**3- Experimental geese:**

Ninety geese (2-4 weeks-old) obtained from private flocks geese in EL-Minia Province were used in the pathogenicity and experimental studies.

**i- Antimicrobial sensitivity discs (Oxoid Laboratories):**

Antimicrobial sensitivity unidiscs produced by Oxoid LTD, London, England, including Ampicillin (10ug), Amoxicillin 25ug, Erythromycin 15ug, Neomycin (30ug), Norfloxacin (5ug), Tetracycline (30ug), Streptomycin (10ug), Chloramphenicol (30ug), Nalidixic acid (30ug), and Gentamycin (10ug) were used in this experiment

**j- Gas-pack anaerobic jar "BBL-814-12":**

It was used for production of anaerobiosis by using disposable hydrogen-carbon dioxide bags with socket. (Baker platinum LTD, London).

## **Methods:**

### **1- Isolation and identification of Clostridium spp.**

Liver, spleen and small pieces of the intestines with their contents from each sample were inoculated into two tubes of freshly sterile cooked meat broth. One tube was heated at in water bath at 60°C for 30 minutes to eliminate non-sporing organisms, whereas the second was left without heating. Both inoculated tubes were then incubated anaerobically at 37°C for 48 hours. A loopful from the heated tubes was inoculated on to 10 % sheep blood agar plates while the unheated tubes were inoculated on to duplicated neomycin blood agar plates. The plates were incubated anaerobically at 37°C for 48 hr. The suspected colonies were examined and identified for microscopic appearance, culture character, motility, then transferred to cooked meat medium for other biochemical tests as described by Koneman *et al.* (1988) and Levett (1991).

### **2- Determination of typing and pathogenic C. Perfringens isolates: -**

#### **a- Nagler, <sup>s</sup> reaction test: - (Hartwig and Ghenitir, 1969)**

In this test the plate egg yolk medium was soaked with few drop of antiserum of type "A", the second with antiserum of type "B" and the third acted as control and the same work was done on the other plate to type C, D, and E. After the dryness of antiserum, then added the centrifuged supernatant (3000 r.p.m.) cooked meat culture in ever part. The plates were incubated anaerobically at 37°C for 24hr and the results were recorded. An opalescence area appeared considered as positive cases

#### **b- Neutralization test in mice: (Smith and Holdeman, 1968)**

It was performed by adding 0.1ml. of specific antisera A, B, C , D and E of C.perfringens (Burrough, <sup>s</sup> Wellcome, Beckenham, London, England) to 3ml. of the centrifuged supernatant (3000 r.p.m.) cooked meat culture. Supernatant culture of only type "D" was treated with 0.1% trypsin for 45 minutes at 37°C. The mixture was left for 30 minutes at 37°C before its injection in mice. Its injection as 0.5ml into mice. The animal were put under observation for 3 days, the centrifuged supernatant (3000 r.p.m.) cooked meat broth culture without adding any antiserum was injected in mice and used as a control

### **3- Determination of the type of toxins in mixed culture by dermo-necrotic test: (Stern and Batty, 1975)**

#### **Preparation of culture suspension:**

A 48 hr. culture in cooked meat medium was prepared from the isolated Clostridia organisms. Gram stained smears made from the

culture were examined microscopically to insure purity, then the pure culture was inoculated into flask contain peptone media and starch for production of alpha, beta and epsilon toxins and incubated in water bath at 37°C for 8 hrs. The cultures suspensions were centrifuged for 30 minute at 3000 r.p.m. The clear supernatant fluid was then siphoned and divided into 5 portions, one portion was neutralized by alpha antitoxin, the second portion was neutralized by beta antitoxin, the third portion was neutralized with the type "C" antitoxin, the fourth portion was treated by trypsin and incubated at 37°C for one hr, then neutralized by type "D" antitoxin while the fifth portion was left for the determination of toxin in the supernatant. The type of toxin was determined by dermo-necrotic reaction recommend by inoculated Albino-guinea-pigs intradermally with 0.2ml of the untrypsinized toxin on the upper left and the trypsinized on the lower left, while the neutralized portions were inoculated on the right side at the same time, the guinea-pigs were kept under observation for 24-72 hr for any dermo-necrotic reaction.

#### **4- Experimental laboratory animals:**

**a) Pathogenicity to Swiss mice:** Inoculated in tail vein with 0.3ml of centrifuged supernatant intestinal content of suspected *C. perfringens* isolates. The animals were kept under observation for 72 hr.

#### **b) Pathogenicity to geese:**

**Experimental infection design:** The experiment was performed to study the pathogenicity of isolated microorganisms through oral administration and I/M inoculation by 0.5ml ( $1.6 \times 10^9$  organism/ml) of 24hr cooked meat broth culture in geese at 15-day old and 45 day old. The plate count technique (Crucickshank *et al.*, 1975) was used for determination of the viable count of cell per ml of suspension for each *C-perfringens* type "A", *C- sporogenes* *C- colinum* and *C.sordelli*. The I/M application was done after injection of 0.5ml of 5% calcium chloride. The used technique was according to Al-Sheikhly and Truscott (1976). All inoculated geese were kept under observation for 14 days. Clinical signs and post mortem lesions of dead birds were recorded and trial for reisolation of inoculated organisms was conducted.

Ninety geese were used in this experimental. The birds were kept in cages and observed for a period a week. A random samples of 5 geese were slaughtered and exposed to post-mortem, parasitological and bacteriological examination, which proved their healthy status and free from diseases while, the other birds were classified into 16 groups Each group contain 5 geese. The last group was kept without inoculation as control Table (4)

### 5- Sensitivity test:

The isolates were tested for sensitivity to different chemotherapeutic agents. One ml of 24hr. broth cultures was spread on the surface of blood agar. Antibiotic sensitivity discs were placed on the surface seeded agar. Plates were incubated anaerobically at 37°C for 24hr. The sensitivity was judged according to the diameter of clearance zone around the discs according to (Perelman *et al.*, 1991).

## RESULTS

**Table 1:** Morphological characters and biochemical reactions of different Clostridia isolates from examined geese

Characters and reactions Of isolates	Type of Clostridia			
	C. perfringens (74)	C. sporogenes (26)	C- colinum (19)	C.sordelli (11)
Morphological character				
Grams stain	+ve bacilli	+ve bacilli	+ve bacilli	+ve bacilli
B.haemolysis	+	+	+	+
Nagler effect	+	+	+	+
Motility	-	+	+	+
Biochemical reactions				
Lecithinase	+	-	-	+
Lipase	-	+	+	-
Urease	V	-	-	+
Indol	-	-	-	+
H <sub>2</sub> S	-	-	+	+
Hydrolysis of gelatin	+	+	+	+
Fermentation of carbohydrates				
Lactose	+	-	-	-
Sucrose	+	-	-	-
Maltose	+	-	+	-
Glucose	+	+	-	+

**Table 2:** Type and incidence of Clostridia organisms isolated from examined geese

Status of examined geese	Total No. of examined geese	Total No. Of +ve samples		C.perfringens		C. sporogenes		C. colinum		C.sordelli	
		No.	%	No.	%			No.	%	No.	%
Apparently healthy	20	6	30.0	1	16.7	1	16.7	2	33.3	2	33.3
Diarrheic geese	120	80	66.7	45	56.3	18	22.5	11	13.7	6	7.5
Freshly dead	60	44	73.3	28	63.6	7	15.9	6	13.6	3	6.8
Total	200	130	65.0	74	56.9	26	20.0	19	14.6	11	8.5

\*Percentage of positive samples calculated according to the total No. of examined samples

\*Percentage of each isolates calculated according to the total No. of isolates

**Table 3:** Incidence of Clostridia organisms isolated from different organs of examined geese.

Source of sample	Total No. of examined geese	Total No. of +ve samples	Site of samples					
			Intestine		Liver		spleen	
			No.	%	No.	%	No.	%
Apparently healthy	20	6	3	50.0	2	33.3	1	16.7
Diarrheic geese	120	80	50	62.5	28	35.0	2	2.5
Freshly dead	60	44	28	63.6	16	36.4	0	0.0
Total	200	130	81	62.3	46	35.4	3	2.3

% was calculated according to total No. of positive samples

**Table 4:** Incidence of non-toxicogenic and toxicogenic types of *C.perfringens* isolated from examined geese

Health status	No. of tested <i>C.perfringens</i>	Total No. of non-toxicogenic		Total No. of toxicogenic		Type of toxicogenic organism						
		No.	%	No.	%	A		C		D		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Apparently healthy	1	1	100	0	0.0	0	0	0	0	0	0	0
Diarrhotic geese	45	6	13.3	39	86.7	28	71.8	7	17.9	4	10.3	
Freshly dead	28	2	7.1	26	92.9	19	73.1	5	19.2	2	7.7	
Total	74	9	12.2	65	87.8	47	72.3	12	18.5	6	9.3	

% of toxicogenic and non-toxicogenic isolates calculated according to No. of tested *C.perfringens*

\*% Type of toxicogenic isolates calculated according to the total No. of toxicogenic isolated

**Table 5:** Results of mortality rate of geese at 15 and 45 day-old. Due to oral administration and I/M inoculation of different Clostridia organisms.

Route of inoculation	No. of geese used	15 day-old								No. of geese used	45 day-old								
		C.perfrigen type A.		C.sporoge		C.colinum		C.sordelli			C.perfrigen type A.		C. sporogenes um		C.colinum		C.sordelli		
		No.	%	No.	%	No.	%	No.	%			No.	%	No.	%	No.	%	No.	%
Oral	5	3	60	2	40	1	20	1	20	5	2	40	1	20	0	0.0	0	0.0	
I/M	5	5	100	4	80	3	60	1	20	5	4	80	2	40	1	20	0	0.0	



**Table 6:** In vitro sensitivity test of Clostridia species isolated to different chemotherapeutic agents

Antibacterial agent	Clostridia species							
	C.perfringens		C.sporogenes		C.colinum		C.sordelli	
	No.	%	No	%	No	%	No	%
Ampicillin (10ug)	4	80	4	80	3	60	4	80
Streptomycin (10ug)	0	00	0	00	0.0	0.0	0	0.0
Kanamycin (30ug)	2	40	3	60	3	60	2	40
Penicillin (1.5 I.U)	5	100	4	80	5	100	4	80
Amoxicillin (10ug)	4	80	4	80	4	80	3	60
Lincomycin (10ug)	2	40	3	60	2	40	2	40
Norfloxacine (10ug)	3	60	2	40	3	60	3	60
Chloramephenical (30ug)	4	80	3	60	2	40	4	80
Tetracycline (30ug)	1	20	1	20	0	0.0	1	20
Gentamycin (10ug)	1	20	0	0.0	0	0.0	0	0.0
Nalidixic acid (30ug)	0	0.0	0	0.0	0	0.0	0	0.0

5 Strains for each clostridia species were tested from each

## DISCUSSIONS

Anaerobic organisms including Clostridia species are considered now to be one of the most common and important of highly mortality in poultry including geese. Study of the prevalence of these organisms in geese represented a significant important.

Clinically, diseased geese were off food, ruffled feathers, depression and diarrhea. P.M examinations revealed that most lesions were found in small intestine and characterized by necrotic, ulcerative catarrhal to haemorrhagic inflammation ,also found that congestion and enlargement of liver , kidney and spleen.

Results of this study according to the morphological characters, biochemical reactions and serological identifications of the recovered clostridia organisms from examined samples was Tabulated in Table (1). From the Table (2) it revealed to 130 Clostridia spp. was isolated from all examined samples with all over incidence of (65.0%). Of these 6 (30%) from apparent healthy, 80 (66.7%) from diseased geese, while was 44 (73.3%) from dead geese, these findings lower than obtained by El-Sisi and Hussein (1976) and Abd-El-Twab (2002) who isolated clostridia spp. from apparently health and diseased geese at 45-day old with incidence of 46.7% and 70% respectively. The incidence of Clostridia species isolated from intestine, liver and spleen for all examined samples was tabulated in Table (3) it showed that, the higher incidence of clostridia organisms were isolates from intestine was

incidence of 81 (62.3%), while was 46 (35.4%) and 3 (2.3%) from liver and spleen respectively from all examined samples. The prevalence rate of clostridia species from intestine, liver and spleen of apparent healthy were 3(50%), 2(33.3%) and 1(16.7%) respectively, while were 50(62.5%), 28 (35%) and 2(2.5%) from diseased geese. These results are nearly agreement with the findings of Hafocre *et al.* (1986) and Abd-El-Twab (2002) who isolated clostridia species from intestinal tract, liver and spleen of apparent healthy with incidence of 36.7%,20% and 0.0% respectively and 63.3%, 30% and 10% respectively from diseased geese. The most important isolates of clostridium organisms was *C. perfringens* with incidence of 74 (56.9%) followed by *C. sporogenes* was 26 (20.7%), *C.colinum* was 19 (14.6%) and *C. sordelli* was 11 (8.5%). It is clear that *C.perfringens* was the highest incidence of the clostridia isolated from all examined samples. It was 1 (16.7%) in apparent healthy,45 (56.3%) in diseased geese, while was 28 (63.6%) in dead geese Table (2).Our results are in agreement with obtained by Wobeser and Rainnie (1987) found *C.perfringens* in large numbers in the intestines of geese suffering from a disease characterized by sever necrotic enteritis. From Table (4) it showed that, the incidence of toxigenic isolates of *C.perfringens* was 65(87.5%) while non- toxigenic was 9(12.2%) from all examined samples. The incidence of toxigenic isolates in diseased and dead geese were 86.7% and 92.9% while non-toxigenic isolates were 13.3% and 7.1% respectively. These findings are agreement with obtained by Abd-El-Twab (2002) who found the toxigenic isolates of *C.perfringens* which isolates from diseased geese was 93.8% while non-toxigenic isolates was 6.2%.Concerning typing of the toxigenic isolates of *C.perfringens*, it clear that *C.perfringens* type "A" was the main isolates with incidence of (72.3%) followed by *C.perfringens* type "C" with incidence of (18.5%) and type "D" with incidence of (9.3%). These findings are nearly in agreement with the results obtained by Latinovic (1983) and Abd-El-Twab (2002) isolated *C.perfringens* type "A", type "C" and type "D" from diseased geese with incidence of (73%), (6.7%) and (20%) respectively. The experimental infection of recovered strains of *C.perfringens* type "A", *C. sporogenes*, *C.colinum* and *C. sordelli* by oral administration and I/M inoculation to geese at 15 day-old and 45 day-old it tabulated in Table (5) it revealed that, the mortality rate in geese at 15-day old with oral administration of *C.perfringens* type "A", *C. sporogenes*, *C.colinum* and *C. sordelli* were 60%, 40%, 20% and 20% respectively while were 100%, 80%, 60% and 20% respectively through I/M inoculation and the mortality rate in geese

at 45-day old through oral administration were 40%, 20%, 0.0% and 0.0% while were 80%, 40%, 20% and 0.0% respectively through I/M inoculation, these findings nearly in agreement with the results obtained by Cowen *et al.* (1987), Kosovae *et al.* (1988) and Abd-El-Twab (2002) found that the mortality rate of geese at one-day old by oral infection with *C.perfringens* *C. sordelli* and *C.sporogenes* were 60%, 40% and 0.0% respectively while were 0.0%, 0.0% and 0.0% respectively at 45-day old, but I/M inoculation at one day the mortality rate were 100%, 60% and 0.0% while were 60%, 20% and 0.0% at 45-day old. The high rate of mortality which reach to 80-100% through I/M inoculation while was 0-40 through oral infection, this is due to I/M inoculation gives the organism suitable condition for anaerobiosis and secretes toxins which the main cause of death, while the oral infection needs certain predisposing factors to produce the disease through disfunction of intestine (Truscott and Al-Sheikhly, 1977)

#### **Results of sensitivity tests:**

In-vitro tests the proper antimicrobial agents against clostridia isolates, it illustrated in Table (6), it revealed that, Penicillin, Ampicillin, Amoxicillin, and Chloramphenicol were highly sensitivity against clostridia isolates at rate of 80% to 100% while Lincomycin, Norfloxacin and Kanamycin were moderate sensitive, at rate of 40% to 60%, on other hand clostridia isolates were resistant to Streptomycin, Gentamycin Tetracycline and Nalidixic acid. Our results findings are in agreement with other authors while disagreed with another due to extensive use of antibiotics as growth promoters and prophylactic agents for disease control in veterinary medicine has undoubtedly been responsible for large numbers of bacteria that have become resistant to different antibiotics. Secasiu (1995) tested the sensitivity of 453 strains of *C.perfringens* isolated from fowel, turkeys, ducks and geese against 19 different antibiotics agents. He found that Penicillin, erythromycin, ampicillium, lincomycin were highly active and Furazolidone, Chloramphenicol, Tetracycline, bacitracin showed moderate activated, while were inactive to Streptomycin, Kanamycin and Sulphonamides. Abd-El-Twab (2002) found that *C.perfringens*, *C.sporogenes* and *C. sordelli* isolated from ducks and geese were highly sensitivity to chloramphenicol, ampicillin, penicillin and kanamycin while least sensitivity to streptomycin, polymycin B, and sulphonamid.

From the abovementioned results, it can be concluded that, intestinal clostridia infections are a common problem among health of geese causing necrotic enteritis and high mortality so, the samples of

diarrhoetic geese must be subjected to the examination for anaerobic microorganisms in the routine work in the research laboratories and the treatment must be given after sensitivity test

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