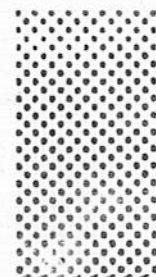


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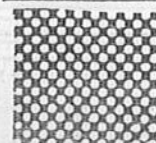
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" SURVIVAL AND VIRULENCE OF AVIAN E. COLI "

BY

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and L.E.Mowafy*

SUMMARY

Survival as well as virulence of (O9 and O77) avian E.coli strains, isolated from dead and diseased birds, were studied in water, feed, egg shell and litter.

The survival periods of E.coli (O9) in water, feed, egg shell and litter were 4, 9, 12 and 21 weeks, respectively, while for E.coli (O77) they were 6, 10, 16 and 22 weeks. The survival periods of E.coli (O9 & O77) in feed, egg shell and litter were longer than in water.

The virulence of E.coli (O9) were 2, 6, 10 and 13 weeks in water, feed and egg shell and litter respectively, while they were 4, 7, 10 and 12 weeks for E.coli (O77). The virulence of (O9 & O77) strains contaminating egg shell and litter were higher than those of water and feed.

INTRODUCTION

The progress in poultry industry needs intensive prophylactic measures against poultry diseases. Among diseases which cause high losses in poultry industry; Colibacillosis occupies a superior place (Farid et al. 1983, Roa & Char, 1983).

E.coli is widely distributed in the environment and is predominant among the aerobic commensal flora present in the gut of many living organisms (Cruickshank et al. 1970).

The degree of infection depends upon the viability of microorganisms (Galberg, 1976) and the susceptibility of the bird (Memerin, 1985).

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The aim of this work is to study the viability and survival of different O-groups avian E.coli isolated from out breaks on various materials present in poultry farms.

MATERIAL AND METHODS

24 hours growth culture of two common E.coli O-Groups (O9 & O77) isolated from dead and diseased birds of the poultry farm, Faculty of Vet.Med., Zagazig University. Serological identification of the two strains were tested against specific E.coli sera in the Central Laboratory, Ministry of Health, Agouza, Cairo, according to (Ewig *et al* 1956). Bacterial suspensions were prepared from each strain to contain (7×10^8 bacterial cells) per 1 ml. suspension.

200 ml. of sterile dist. water as well as 200 gm of other articles (feed, egg shell and litter) were sterilized and contaminated with 10 ml. of the bacterial suspension of each strain and kept at room temperature ($24 \pm 5^\circ\text{C}$).

After thorough mixing, the viable microorganisms in water were detected by taking a loopful and streaked on MacConkey's agar as well as on Endoagar, the inoculated plates were incubated at 37°C for 24-48 hrs.

For the recovery of microorganisms from contaminated feed, or egg shell or litter, 1 gm from each material was taken into sterile test tubes containing 9 ml of nutrient broth contains 0.5% glucose. After thorough mixing, the tubes were incubated at 37°C for 3 hrs., then a loopful from each tube was streaked on MacConkey and on Endoagar plates and incubated at 37°C for 24-48 hrs.

For detection of virulence a separate growing colony on each plate was picked up on slope agar tubes.

The virulence of the isolated microorganisms from the artificially contaminated materials were studied by injecting 1 ml of a bacterial suspension (10^6 bacterial cell) from the isolated colonies already mentioned above into ligated rabbit ileal loop. Accumulation of fluids inside the lumen of the injected ileal loop indicate positive results (Drucker *et al.* 1967)

Isolation of the previously mentioned microorganisms from the contaminated materials were conducted daily for a week, and then weekly till no growth was obtained on the inoculated media.

RESULTS AND DISCUSSION

Table 1: Survival periods of E.coli strains on different contaminated materials

O-Group	Material Used			
	Water	Feed	Egg shell	Litter
O9	4 wks	9 wks	12 wks	21 wks
O77	6 wks	10 wks	16 wks	22 kws

Table 2: Virulence of E.coli strains on different contaminated materials.

O-Group	Contaminated materials			
	Water	Feed	Egg shell	Litter
O9	2 wks	6 wks	10 wks	13 wks
O77	4 wks	7 wks	12 wks	12 wks

DISCUSSION

The survival periods of different O-groups of E.coli on various contaminated materials were highly different. As shown from table(1), the microorganisms were recovered from the contaminated water for a period of 4 and 6 weeks for (O9 & O77), respectively. While the periods of longevity for (O9) were 9, 12 and 21 weeks on contaminated feed, egg shell and litter, respectively. On the other hand these periods for (O77) were 10, 16, and 23 weeks on contaminated feed, egg shell and litter, respectively.

The long survival periods of E.coli on feed, egg shell and litter may be attributed to the ability of the microorganisms to withstand the unfavourable circumstances (Anderson and Cooper, 1969, Sergiene and Majael, 1979) or the presence of organic matter on these materials (Al-Wakeel, 1980).

The presence of viable E.coli (O9 & O77) on egg shell and litter for a long period is agreed with that reported by Galacof & Pribikof (1978), and Smith and Hall (1981).

Kardriavit *et al.* (1981), threw light on the possibility of severe reinfection of birds by these contaminated materials.

Regarding the virulence of the tested microorganisms, it is clear from table (2) that O9 strain, remained virulent for 2, 6, 10 and 13 weeks in case of contaminated water, feed, egg shell and litter respectively. While O77 strain kept its virulence for 4 & 7 weeks in water and feed. Moreover, it stayed virulent for 12 weeks in both egg shell and litter. From the obtained results, it was found that, the virulence of (O9 & O77) strains contaminating egg shell and litter were higher than those of water and feed.

It is worth to mention that, the contaminated egg shell should be cleaned and fumigated before set in egg incubators. Moreover, water and feed should be analysed before used in poultry farms. Concerning litter it should be disinfected before used and always kept dry as much as possible.

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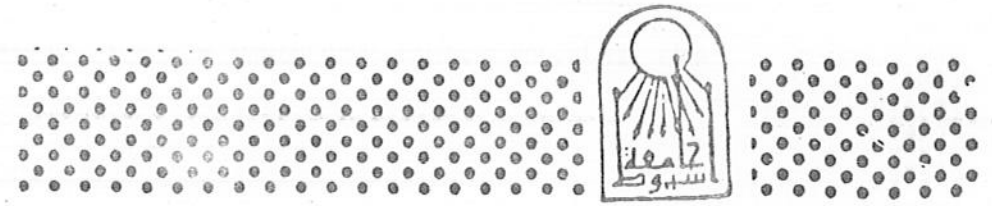
حيوية وضراوة الاشريشيا القولونية الطيرية
د. محمد أنور مرزوق، د. ربيع صالح، د. لطفى الغنم
أ. د. ليلى موافى

أجريت هذه الدراسة لمعرفة مدى حيوية وضراوة ميكروب القولون
المعدى المعزول من طيور مصابة ونافقة من المرضى

وقد تم دراسة حيوية هذه الميكروبات (077 ، 09) على
بيئات ملوثة صناعيا وهى الماء، العليقة، الفرشة، قشرة البيض وقد
وجد أن فترة حيوية ميكروب الاشريشيا القولونية عترة (09)
فى الماء، العليقة، وقشرة البيض، الفرشة هى ٢١، ١٢، ٩، ٤ أسابيع
على التوالى. بينما بالنسبة للعترة (077) فترة الحيوية
هى ٦، ١٠، ١٦، ٢٢ أسبوع على التوالى فى هذه البيئات
الملوثة.

وبدراسة مدة ضراوة الميكروبات فى الماء والعليقة وقشرة
البيض والفرشة، وجدت بالنسبة للعترة (09) ٢، ٦، ١٠، ١٣ أسبوع
على التوالى، وبالنسبة للعترة (077) وجدت ٤، ٧، ١٠، ١٢
أسبوع على التوالى.

وقد لوحظ عامة أن مدة بقاء وضراوة هاتين العترتين فى
الفرشة وقشرة البيض أطول منها فى الماء والعليقة.



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