**الملخص الإنجليزي لرسالة الماجستير**

**الخاصة**

**بالسيد الدكتور/ أحمد حسين عابد معوض**

**مدرس البكتريا والفطريات والمناعة**

**كلية الطب البيطرى- جامعة بنى سويف**

**Title:**

**"A contribution towards the bacterial pathogens associated with respiratory problems in broiler chickens"**

**Summary**

Bacteriological examination of a total of 300 chickens revealed that 235 cases were harbored bacterial strains affecting the respiratory tracts of chickens with an incidence of 78.33%.

Out of 300 cases, 212 and 23 cases werepositive for single and mixed infection with an incidence of 70.67% and 7.67%, respectively.

The bacterial species isolated from the examine cases (300) were predominantly, *E. coli* (125 isolates), *P. aeruginosa* (64 isolates), *Kl. pneumoniae* subsp. pneumoniae (29 isolates), *P. mirabilis* (16 isolates), *S. aureus* (14 isolates) and *Streptococcus* species (10 isolates).

The most prevalent *E. coli* serogroups recovered from diseased chickens with respiratory manifestations were O78 and O1 with an incidence of 19%, 7.33%, respectively, followed by O2 (4%), O8 (3.33%), O25 (2.67%) and O119 (2%) while 10 isolates (3.33%) could not be serotyped by the available antisera.

*E. coli*, *P. aeruginosa*, *P. mirabilis* and *S. aureus* were recovered mainly from air sac samples (27%, 10.67%, 3.67% and 2%, respectively). Meanwhile, *Str. avium* and *Str. zooepidemicus* were recovered mainly from lung samples (1.33% and 0.67%, respectively). *Kl. pneumoniae* subsp. pneumoniae were recovered mainly from both lung and tracheal samples (3.33% of each).

The isolated *E. coli* serogroups were examined for the following virulence factors: Congo red binding assay, haemolytic activity, haemagglutination activities (haemagglutination and mannose resistance haemagglutination) and serum resistance tests (survival or growth in serum). The serogroups O78 and O1 were the most virulent isolates. Only serogroups O78 and O1 showed Congo red binding activity with an incidence of 68.7%. None of the isolates showed haemolytic activity while, all serogroups showed mannose resistance activity with chicken erythrocytes with an incidence of 100%. Also, all serogroups except serogroup O25 was able to survive and grow in serum with an incidence of 93.54% for each.

Concerning with detection of the virulence of *P. aeruginosa* it was found that, 58 isolates (90.63%) were β- haemolytic onto blood agar, while only 6 isolates (9.37%) were non haemolytic. All isolates produced exotoxins which have bactericidal effect on the other microorganisms.

The in-vitro sensitivity of 20 isolates of *E. coli*O78, 15 isolates of *E. coli*O1and 25 isolates of *P. aeruginosa* against 13 chemotherapeutic agents revealed that, *E. coli* O78 isolates were highly sensitive to Gentamycin (90%), Florfenicol (85%) and LincoSpectin (75%). The same strains were highly resistant toAmoxycillin (75%), Erythromycin (70%) and Streptomycin (70%).*E. coli*O1 isolates were highly sensitive to Florfenicol, LincoSpectin and Gentamycin in an incidence of 86.67%, 86.67% and 80%, respectively. On the other hand, *E. coli*O1 strains were highly resistant to Amoxycillin (86.67%), followed by Streptomycin (66.67%) then Erythromycin and Kanamycin (60%) for each. *P.aeruginosa* strains were more sensitive to Enrofloxacin (40%), Pefloxacin (36%) and Ceftifour (36%).The results also showed that, *P.aeruginosa* strains were resistant to the most chemotherapeutic agents especially Amoxycillin (100%), Erythromycin (80%) and Kanamycin (76%).

Lipopolysaccharides (LPSs) were extracted and purified from the cell wall of *E. coli*O78 and *P.aeruginosa* then analyzed by Sodium dodecyl sulphate-polyacrylamide gel electrophoresis (SDS- PAGE) and stained with silver stain. The results revealed that, presence of similarity between LPS of *E. coli*O78 and that of *P.aeruginosa*.

Hyperimmune sera were prepared in chickens against inactivated LPSs of both *E. coli*O78 and *P.aeruginosa*. The obtained hyperimmune sera were examined for detection and titration of specific antibodies against specific LPS using AGPT and ELISA and against the specific microorganisms using slide agglutination test.

Results of AGPT revealed that, each hyperimmune serum gave positive results with the both LPSs of *E. coli*O78 and *P.aeruginosa*.

Results of slide agglutination tests for chicken hyperimmune sera against the whole cells of *E. coli* and *P. aeruginosa* showed that, each hyperimmune serum gave positive agglutination with its specific microorganism.

Results of ELISA showed that, the antibody titer of *E. coli* LPS was **800** and the antibody titer of *P.aeruginosa*LPS was **400**.

The experimental infections of isolated *E. coli*O 78 and *P. aeruginosa* and their LPSs for 21 days old chicks either through air sacs or intravenously were carried out and compared with each other and the results showed similarity between each microorganism and its specific LPS in clinical signs, post mortem pictures an mortalities.

Each microorganism was inoculated with the specific hyperimmune serum against its LPS. It was found that each hyperimmune serum gave protection against its specific microorganism when inoculated in chickens.