شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

Cairo University
Faculty of Veterinary Medicine

Bacteriological and Molecular Studies on Multidrug Resistant Bacteria Isolated from Poultry and Poultry Products

A Thesis submitted by

Nesma Mohamed Kamel Ali

(B.V.Sc., Cairo University, 2010, M.V.Sc., Cairo University, 2015)

For the Ph.D. Degree in Veterinary Medical Sciences (Microbiology)

Under the supervision of

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Dokki , Giza ,Egypt

2020

Cairo University
Faculty of Veterinary Medicine
Department of Microbiology
(Bacteriology, Immunology and Mycology)

Approval sheet

The examining committee approved **Misses**. Vet. **Nesma Mohamed Kamel Ali** for the Degree of Doctor of Philosophy in Veterinary Medicine "Microbiology" (Bacteriology – Immunology - Mycology) has been approved by the Examination Committee

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(26th March, 2020)

Cairo University
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Supervision sheet

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Thesis title: Bacteriological and Molecular Studies on Multidrug Resistant Bacteria Isolated from Poultry and Poultry Product.

Abstract

This study investigated the incidence of multi-drug resistant (MDR) organisms in poultry and poultry products in Egypt. From a total of 300 poultry and poultry product samples 25, 20, 15, and 10 isolates were recognized as *Salmonella* spp., *E.coli, S.aureus* and *E.faecalis* by bacteriological and molecular methods. Studying antibiotic sensitivity pattern of the bacterial isolates , multidrug resistance to three or more classes of antimicrobial groups was observed in 9 (36%), 18(90%), 15(100%), and 9 (90%) isolates of *Salmonella* spp., *E.coli*, *S. aureus* and *E. faecalis*, respectively. *E. coli* and *Salmonella* isolates were tested for its susceptibility against 14 different antibiotics; the highest resistance rates in *E. coli* were recorded against tetracycline, chloramphenicol , ampicillin, and sulphamethoxazole-trimethoprim with resistance rates of 90% , 85% ,80% and 80 % ,respectively.The highest sensitivity rates were detected for amikacin , cefuroxime and ampicillin-sulbactam with sensitivity rates 100%, 75% and 70% , respectively. In *Salmonella* isolates increased resistance to cefotaxime and tetracycline with a percentage of 80% and 64% was detected, respectively. Also the highest sensitivity rates were detected for amikacin and ampicillin-sulbactam with sensitivity rates of (92%), and (88%) for amoxicillin clavulanate and ceftazidime. The antibiotic susceptibility pattern of *S.aureus* was studied against 12 different antibiotics. The highest resistance rates were detected against methicillin, pencillin, erythromycin and azithromycin with resistance rates of (100%) and (80%) for gentamycin . The highest sensitivity rate was detected towards vancomycin with a percentage of 80%. In enterococci (100%) of the strains were resistant to clindamycin and ampicillin, (80%) for rifampin and 70% for tetracycline. The highest sensitivity rates were detected to pencillin and

vancomycin with a percentage of 80%and 60%,respectively. Serotyping of *Salmonella* spp. in chicken revealed that *S.* Enteritidis was the most isolated strain followed by *S.* Infantis (21.4%), *S.* Kentucky (14.2%) and *S.* Typhimurium, S. Kapemba, S. Newport, S. Vejle and S. Magherafelt were equally identified . *S.* Infantis was the most common strain detected in chicks (60%), while in ducks *S.* Typhimurium and *S.* Blegdam were equally identified. In ducklings, *S.* Sinchew, *S.* Infantis and *S.* Sekondi were equally. Only *S.* Newmexico was identified in poultry products. Isolates of *E. coli* recorded in chicken were serogrouped into O1, O8, O29, O125, O128 and O157. In chicks, O29 and O126 serotypes were detected. In poultry products only O8 was detected. Molecular detection for antibiotic resistance genes revealed that bla_{TEM} being the predominant b-lactamases detected in *Salmonella* spp. and *E.coli*. While *mec*A was detected in all *S. aureus* isolates (all are Methicillin resistant *Staphylococcus aureus*). For enterococcus *van*A gene was detected in 3 isolates (30%), no *van*B was detected. The results indicate that frequency of multi-drug resistant organisms has reached an alarming level in poultry isolates in Egypt. It significantly points to the great need to evaluate and monitor the incidence rate of multi-drugs resistant organisms.

Key words: MDR, *E. coli*, *mec*A gene, poultry, poultry products, *Salmonella.*

Special dedication

I would like to dedicate

this work to

My Father, My Mother,

My husband Ahmed,

my daughter Karen ,

my sons Malek and

Youssef, Miss sherefa

and My friend Sarah