Cairo University
Faculty of Veterinary Medicine
Department of Microbiology

Advanced studies on *Enterococcus* species recovered from poultry

A Thesis Presented
By

Aalaa Samir Ahmed Saad
(B.V.Sc., Cairo University, 2009)
(M.v.sc., Cairo University, 2014)

For the Degree of
Doctor of philosophy in Veterinary Medical Science
Bacteriology

Under The Supervision Of

Prof. Dr. Kamelia Mahmoud Osman Ahmed
Professor of Microbiology
Faculty of Veterinary Medicine,
Cairo University

Prof. Dr. Jihan Mostafa Badr
Chief Researcher of Microbiology
Department of Poultry Diseases
Animal Health Research Institute, Dokki

2018

Cairo University
Faculty of Veterinary medicine
Department of Microbiology

A letter of introduction from **Aalaa Samir Ahmed Saad**
Specialization: **Microbiology**

Title: Advanced studies on Enterococcus species recovered from poultry

Under supervision of:

1-Professor Dr. kamelia Mahmoud Osman Ahmed
Professor of microbiology, Department of Microbiology
Faculty of Veterinary Medicine, Cairo University

2- Professor Dr. Jihan Mostafa Badr
Chief Researcher of microbiology, Department Poultry Diseases,
Animal Health Research Institute.

Abstract

Out of 150 samples 38 chicken samples (7 brains, 23 livers and 8 hearts), 41 pigeon samples (6 livers and 35 swabs), 41 duck samples (15 brains, 20 livers and 6 hearts) and 30 human samples (30 Urine samples). The prevalence of *Enterococcus* isolates were 79 %, 100%, 85.4% and 66.7% in the chickens, pigeons, ducks and human samples respectively. *Enterococcus* spp. showed gelatin hydrolysis activity positive in 50% of *Enterococcus* spp. recovered from chicken, While was positive in a percentage of 34.1% , 25% and 11.4% for *Enterococcus* spp. recovered from pigeons, human and ducks respectively. *Enterococcus* spp. isolated from pigeon had the highest casein hydrolysis activity 61% followed by *Enterococcus* spp. isolated from chicken 53.3% then *Enterococcus* spp. isolated from ducks 42.9% and the lowest casein hydrolysis activity was *Enterococcus* spp. isolated from human source 10%. The *Enterococcus* spp. results for affinity percentage from Chicken were 70% and 30%, Pigeon 61% and 39%, Ducks 68.6% and 31.4% and Human 95% and 5% as moderate and strong biofilm forming capability respectively. All *Enterococcus* isolates supernatant fluid showed cytopathic effect on the Vero cell line (100%).The prevalence of the total γ-hemolysis activity of *Enterococcus* spp. reached 66.7% as well as, the β-hemolysis activity and α– hemolysis reached 29.4% and 4% respectively. The percentage of 63.5% for *Enterococcus* isolates were positive for Haemagglutination (HA) of sheep blood while the percentage of 28.6 % was positive for HA of chicken blood. The results showed that *Enterococcus* spp. of chickens origin high resistant to Clindamycin, Oxytetracycline, Doxycycline, Gentamycin(LLA), Ciprofloxacin and Vancomycin. *Enterococcus* spp. of pigeons origin high resistant to Clindamycin, Oxytetracycline, Doxycycline, Gentamycin(LLA) and Vancomycin . *Enterococcus* spp. of ducks origin high resistant to Clindamycin, Erythromycin, Gentamycin(LLA) and Vancomycin. While *Enterococcus* spp. of human origin high resistant to Ampicillin, Clindamycin, Oxytetracycline, Gentamycin(LLA) and Vancomycin. The results revealed that a positive amplification of the *vanA, vanB* and *vanC* genes in the 126 isolates of *Enterococcus* spp. were detected in a percentage of 19.84%, 16.67 and 8.73% respectively. While the a positive amplification of the *catA, catB, fexA, fexB* and *cfr* genes in the 126 isolates of *Enterococcus* spp. were 27%, 18.25 %, 11.90% and zero% respectively.

.

Key words: ***Enterococcus*** **species, antimicrobial resistance, virulence, poultry.**

List of Contents

List of Figures

List of Tables