Cairo University
Faculty of Veterinary Medicine
Department of Microbiology

Further Insights into the Diversity of Coagulase Positive Staphylococci: Special Consideration to Coagulase Gene Polymorphism and Reaction

A Thesis presented by

Nouran Mostafa Abd El-Razek

B.V.Sc., Cairo University (2009)

For Master Degree

In Veterinary Medical Sciences, Microbiology

(Bacteriology - Immunology - Mycology)

Under the supervision of

Prof. Dr. Wagih Armanious Gad El Said
Professor of Microbiology,
Faculty of Veterinary Medicine,
Cairo University

Dr. Mahmoud Dardiri El-Hariri
Assistant Professor of Microbiology,
Faculty of Veterinary Medicine
Cairo University

Prof. Dr. Mona Abd El Mohsen El Shabrawy
Professor of Microbiology,
National Research Center

2016

بسم الله الرحمن الرحيم

(وقل اعملوا فسيرى الله عملكم ورسوله والمؤمنون)

سوره التوبه

(سبحانك لا علم لنا إلا ما علمتنا انك أنت العليم الحكيم)

سوره البقرة

صدق الله العظيم

Acknowledgement

The student wishes to express her deep gratitude and sincere appreciation to Prof. Dr. Wagih Armanious Gad El-Said Professor of Microbiology, Faculty of Veterinary Medicine, Cairo University for suggesting the problem of this study, his supervision, fruitful guidance, continuous encouragement, valuable criticism, and help during the course of this study.

Special thanks as well as great appreciation are also given to Prof., Dr. Mona Abd El-Mohssen El-Shabrawy, Professor of Microbiology of National Research center for her supervision, fruitful advice and continuous help throughout the course of this study.

Special thanks, to Dr. Mahmoud EL Hariri, Assistant Professor of Microbiology, Faculty of Veterinary Medicine, Cairo University for his precious help during this study.

The student would like also, to offer her deep thanks to all staff members of the Microbiology Department, Faculty of Veterinary Medicine, Cairo University, who offered her valuable help, support and facilities, which must be reckoned to carry this work.

Cairo University

Faculty of Veterinary Medicine

Department of Microbiology

Name	***:***	***Nouran Mostafa Abd Elrazek***
Birth date	***:***	***18/7/1987***
Nationality	***:***	***Egyptian***
Scientific degree	***:***	***Master Degree***
Specialty	***:***	***(Bacteriology - Immunology - Mycology)***
Thesis title	***:***	***Further insights into the diversity of coagulase positive Staphylorcocci special consideration to coagulase gene polymorphism and reaction***

Under the supervision of

Prof. Dr. Wagih A.Gad EL-Said, Prof. Dr. Mona El Shabrawy and Dr. Mahmoud EL-Hariri

Abstract

In this study 226 samples (80 human samples, 60 dog samples, 36 cat samples and 50 poultry samples) were examined for the presence of coagulase positive staphylococci by using conventional method and PCR. Based on conventional methods there is 32 isolates were identified coagulase positive by slide method, whereas this number was diminished by tube method to be 20 isolates. To confirm *S. aurues* isolates, Voges-Proskauer test was applied as simple confirmatory test for *S. aurues.* The test revealed 16 isolates were are full identified. Polymyxin B resistance test was used to differentiat coagulase positive staphylococci, and two isolates completelty identified as *S. intermedius* depending on phenotypic parameters. Thermonuclease and coagulase gene were amplified in both species *S. aurues and S. intermedius* with the same primer pairs. The PCR results of coagulase positive staphylococci were subjected to restriction digestion using RFLP with *Alu*I. The banding profiles of RFLP were 4 distinct profiles (I, II, III &IV). Discrimination powers of RFLP not enough to differentiate *S. aureus* from *S. intermedius*. The sequencing for *coa* gene was done for selected 10 isolates including 2 *S. intermedius* isolates. The constructed phylogenetic trees for *Staphylococcus* isolates revealed a suppose of the major ancestor for animal infection cases could come from human cases. In spite of all isolates are from different origins but it's harboring the major one genotype of *S. aureus* clone. It is tempting to say that *coa* gene sequence of *S. intermedius* was reported as far as it is known for the first time in Egypt on GenBank with accession No. KU178988 & KU178993. It is loped that the data obtained puts this study in perspective when designing control strategies of staphylococcal infection as the issues in the concern.

List of contents

List of contents

List of contents

List of contents

List of contents

List of tables

List of figures