بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

Cairo University
Faculty of Veterinary Medicine
Department of Aquatic Animal Medicine and Management

Molecular Detection of the Most Common Bacterial Pathogens Affecting Economically Important Egyptian Red Sea Fishes

Thesis
Presented by

Asmaa Wahby Soliman Mohamed
B.V.Sc South Valley University (2009)
M.V.Sc South Valley University (2015)

for degree of Ph.D.in
Aquatic Animal Medicine and Management

Under supervision of

Prof. Dr. Alaa Eldin Eissa
Professor and Chairperson of Aquatic Animal Medicine and Management,
Faculty of Veterinary Medicine
Cairo University.

Prof. Dr. Mohamed Abdelsalam
Professor of Aquatic Animal Medicine and Management
Faculty of Veterinary Medicine
Cairo University

Dr. Mahmoud Abou-Okada
Lecturer of Aquatic Animal Medicine and Management, Faculty of Veterinary Medicine,Cairo University

Prof. Dr. Abbass Sayed Aboulezz
Professor of Aquatic Animal Disease
National institute of Oceanography and fisheries (NIOF).

2021

Cairo University

Faculty of Veterinary Medicine

Department of Aquatic Animal Medicine and Management.

Approval sheet

This to approve that the dissertation by:

Asmaa Wahby Soliman Mohamed to Cairo University for the **Ph.D.** degree in Veterinary Science (**Aquatic Animal Medicine and Management**) has been approved by the examining committee:

Dr. Taghreed Borhan El-Deen Ibrahim

Professor of Hydrobiology, National research center.

Dr. Mohamed Sayed Mohamed Marzouk

Professor of Aquatic Animal Medicine and Management, Faculty of Veterinary Medicine, Cairo University.

Prof. Dr. AlaaEldin Eissa(supervisor)

Professor and Head of Aquatic Animal Medicine and Management.Faculty of Veterinary Medicine, Cairo University

Prof.Dr. Mohamed Abdelsalam(supervisor)

Professor of Aquatic Animal Medicine and Management, Faculty of Veterinary Medicine, Cairo University.

Prof. Dr. Abbass Sayed Aboulezz(supervisor)

Professor of Fish disease department, National institute of Oceanography and fisheries (NIOF).

Date: 31/10/2021

Cairo University
Faculty of Veterinary Medicine
Department of Aquatic Animal Medicine and Management

SUPERVISION SHEET

Molecular Detection of the Most Common Bacterial Pathogens Affecting Economically Important Egyptian Red Sea Fishes

Thesis
Presented by
Asmaa Wahby Soliman Mohamed
Under supervision of

Prof. Dr. Alaa Eldin Eissa
Professor and Chairperson of Aquatic Animal Medicine and Management,
Faculty of Veterinary Medicine
Cairo University.

Prof. Dr. Mohamed Abdelsalam
Professor of Aquatic Animal Medicine and Management
Faculty of Veterinary Medicine
Cairo University

Dr. Mahmoud Abou-Okada
Lecturer of Aquatic Animal Medicine and Management, Faculty of Veterinary Medicine,Cairo University

Prof. Dr. Abbass Sayed Aboulezz
Professor of Aquatic Animal Disease
National institute of Oceanography and fisheries (NIOF).

2021

Dedication

All my family

Acknowledgment

*First of all, gratitude and my prayerful thanks go to "**ALLAH**" for everything, bestowed on me during my life.*

*I would like to express my deepest thanks and gratitude to **Professor Dr. Alaa Eldin Eissa**, Professor& Chairperson of Aquatic Animal Medicine and Management, Faculty of Veterinary Medicine, Cairo University, for his stimulating supervision, great help, valuable & continuous share, encouragement and continuous following up.*

*In addition, I am owed a lot to **Professor Dr. Mohamed Abdelsalam** Professor of Aquatic Animal Medicine and Management, Faculty of Veterinary Medicine, Cairo University. For his valuable supervision, supplying facilities and continuous encouragement through this work.*

*I wish also to express my thankful feelings to **Professor Dr. Abbass Sayed Aboulezz**, Professor of Aquatic Animal Disease, National institute of Oceanography and fisheries (NIOF).for continuous help, his guidance and support.*

*My grateful appreciation and thanks **Dr. Mahmoud Abou-Okada**, lecturer of Aquatic Animal Medicine and Management, Faculty of Veterinary Medicine, Cairo University for his careful guidance, stimulating criticism and valuable discussion and advice throughout this work.*

*I wish to express my sincere gratitude and thanks to my supporter and helpful supervisor **Dr. Arafaa Emam** lecturer of Aquatic Animal Disease, National institute of Oceanography and fisheries (NIOF)., for his continuous helpfrom the beginning till the end of this work, so no words could be sufficient to thank him.*

*It is a great pleasure for me to thank **Dr. Lamis** lecturer of Aquatic Animal Disease, National institute of Oceanography and fisheries (NIOF) for her continuous help, her guidance and support.*

It is a great pleasure to express my thanks and gratitude to all staff members of Aquatic Animal Medicine and Management Department, Faculty of Veterinary Medicine, Cairo University.

Cairo University
Faculty of Veterinary Medicine
Department of Aquatic Animal Medicine and Management

Name: Asmaa Wahby Soliman Mohamed.
Date of birth: 20/1/1988.
Degree: Ph.D.Veterinary Science.
Nationality: Egyptian.
Specialization: Aquatic Animal Medicine and Management.

Title of the Thesis: Molecular Detection of the Most Common Bacterial Pathogens Affecting Economically Important Egyptian Red Sea Fishes.

Supervision:

Prof. Dr. Alaa Eldin Eissa
Professor and Chairperson of Aquatic Animal Medicine and Management
Faculty of Veterinary Medicine, Cairo University

Prof. Dr. Mohamed Abdelsalam
Professor of Aquatic Animal Medicine and Management
Faculty of Veterinary Medicine, Cairo University

Dr. Mahmoud Abou-Okada
Lecturer of Aquatic Animal Medicine and Management
Faculty of Veterinary Medicine, Cairo University

Prof. Dr. Abbass Sayed Aboulezz
Professor of Aquatic Animal Disease
National institute of Oceanography and fisheries (NIOF).

Abstract

The current study aimed to investigate the most common pathogenic bacteria that naturally infected wild marine fishes collected at different localities along the coastaline zone of Hurghada City, Egypt. A total of 550 samples of marbled spinefoot *Siganus rivulatus* and the Haffara Seabream *Rhabdosargus haffara* were subjected to clinical and bacteriological examinations. The examined fishes showed the characteristic clinical signs and postmortem lesions of vibriosis, photobacteriosis streptococcosis and tenacibaculosis. Based on the morpho-chemical characterization, bacterial isolates retrieved from the naturally infected fishes were identified as *Vibrio* spp., *Photobacterium* spp, Through sequencing 16S rRNA genes, the identities of bacterial isolates were confirmed as *V. alginolyticus, V. vulnificus, P. damselae* subsp *damselae, P. damselae* subsp *piscicida, Enterococcus fecalis, Streptococcus iniae, Enterobacter cloacae and Tenacibaculum maritimum.Vibrio alginolyticus* was the most frequent isolated bacterial pathogen of the total isolates recovered from *S. rivulatus* and *R. haffara*. Thus, the current study confirms that *Vibrio* spp., *Photobacterium* spp., *Streptococcus* spp., and *Tenacibaculum spp.* remain the most prevalent bacterial pathogens infecting Egyptian Red Sea fishes. From food safety perspective, these types of infections could pose potential public health hazards.

Key words: *Vibrio alginolyticus, V. vulnificus, Photobacterium damselae, E. faecalis, E. cloacae, S. iniae, T. maritimum,* Red Sea fishes, Sequencing, Phylogenetic analysis.