



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكرو فيلم



MONA MAGHRABY



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

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



MONA MAGHRABY



Cairo university
Faculty of Veterinary Medicine
Department of Virology

Protective efficacy of an inactivated vaccine against rabbit hemorrhagic disease virus 2 prepared from a local isolate in Egypt

A Thesis submitted by

Ola Youssef M. Youssef

(BVSc, Cairo University, 2011; MVSc, Cairo University, 2017) For

the Degree of the Ph.D

(Virology)

Under Supervision of

Prof. Dr. Ahmed A. El-Sanousi

Prof. of Virology, Faculty of
Veterinary Medicine, Cairo
University.

Dr. Ayman H. EL-Deeb

Assistant prof. of Virology,
Faculty of Veterinary
Medicine, Cairo University.

Dr. Mahmoud M. Abo-Taleb

Researcher , Central Lab. For
Evaluation of Vet. Biologics (CLEVB).
Abbassia, Egypt

Dr. Nahed Y. Abd El-Aziz

Researcher, Animal Health Research
Institute, Dokki, Egypt



Approval Sheet

This is to approve that Thesis presented by

Ola Youssef Mohamed Youssef

For the degree of PhD. (Virology) has been approved by the examining committee

Prof. Dr. Mohamed Saed Mohamed EL-Shahidy

Professor of Virology
Faculty of Veterinary Medicine
Seuez canal University

M. Saed EL-Shahidy

Prof. Dr. Hussein Aly Hussein

Professor of Virology and Vice- Dean of Graduate
Studies and Research, Faculty of Veterinary Medicine
Cairo University

Hussein Ahmed

Prof. Dr. Ayman Hany Mahmoud EL-Deeb

Ass. Prof. of Virology
Faculty of Veterinary Medicine
Cairo University (Supervisor)

Ayman EL-Deeb

Prof. Dr. Ahmed Abd EL-ghani EL-Sanousi

Professor of Virology
Faculty of Veterinary Medicine
Cairo University (Supervisor)

Ahmed EL-Sanousi

2020



Cairo university
Faculty of Veterinary Medicine
Department of Virology

Supervision sheet

Prof. Dr. Ahmed Abdel El-Ghani El-Sanousi

Professor of virology

Faculty of veterinary medicine

Cairo University

Dr. Ayman H.M. EL-Deeb

Assistant professor of virology

Faculty of Veterinary Medicine

Cairo University

Dr. Mahmoud M. Abo Taleb

Researcher

Central lab. For evaluation of veterinary biologics.

Dr. Nahed Y. Abd El-Aziz

Researcher

Animal Health Research Institute

Cairo university
Faculty of veterinary medicine
Department of virology

- **Name** : Ola Youssef M. Youssef.
- **Nationality** : Egyptian.
- **Date of birth** : 31/7/1989.
- **Place of birth** : Egypt.
- **Department** : Virology.
- **Thesis Title**: “Protective efficacy of an inactivated vaccine against rabbit hemorrhagic disease virus 2 prepared from a local isolate in Egypt”.
- **Supervisors**
 - **Prof. Dr. Ahmed Abdel El-Ghani El-Sanousi**, Professor of virology. Faculty of Vet. Med. Cairo University.
 - **Dr. Ayman H.M. EL-Deeb**, Assistant professor of virology Department. Faculty of Vet. Med. Cairo University.
 - **Dr. Mahmoud M. Abo Taleb**, Researcher of Virology at CLEVB.
 - **Dr. Nahed Yehia**, Researcher of Virology at Animal Health Research Institute.

ABSTRACT

Rabbit hemorrhagic disease is a contagious viral disease of rabbits controlled by vaccination. The present study was aimed to diagnose rabbit hemorrhagic disease from 11 infected farms from Qalubia governorate during 2019 and to prepare homologous vaccine against rabbit hemorrhagic disease virus 2. For this purpose, 11 liver samples were collected from suspected cases and subjected to detection and identification of circulating rabbit hemorrhagic disease virus. Ten samples were confirmed to be rabbit hemorrhagic disease virus using hemagglutination test, animal inoculation and reverse transcriptase polymerase chain reaction. Sequencing and phylogenetic analysis of two isolates (R5&R6) revealed the presence of rabbit hemorrhagic disease virus 2 (A/Qalubia/2019 and B/Qalubia/2019) under accession number MT07629 and MT067630 respectively. The inactivated rabbit hemorrhagic disease virus vaccines were prepared using Montanide ISA 206 oil or aluminum hydroxide gel adjuvants. Prepared vaccines were inoculated subcutaneously in susceptible rabbits and submitted to sterility, safety and potency tests. Obtained results showed that mean hemagglutination inhibition titer for aluminum hydroxide gel vaccine was 6.7, 7.7, 8.9 and 9.1 log₂ while, Montanide vaccine reached to 6.7, 8.7, 9.2 and 9.5 log₂ at 1st, 2nd, 3rd, and 4th weeks post vaccination, respectively. Immunized rabbits with Montanide vaccine showed better protection reach to 70%, 90%, 100% and 100% when compared to aluminum hydroxide gel vaccine 60%, 70%, 90% and 90% at 1st, 2nd, 3rd and 4th weeks post vaccination respectively.

Keywords: *Rabbit hemorrhagic disease virus; humoral immune response; vaccination; serology; polymerase chain reaction; Lethal Dose 50*



Dedication

To my family

*My kind father, my lovely mother, my lovely sisters and
brother*

(A special thank you for being there in times of crisis.)

To my best friends

Acknowledgments

“Praise to Allah, who has guided us to this; and we would never have been guided if Allah had not guided us.”

I would like to express my gratitude and appreciation to the following:

Prof. Dr. Ahmed Abdel EL-Ghani EL-Sanousi, Professor of Virology, Faculty of Veterinary Medicine, Cairo University, *Dr. Ayman H.M. EL-Deeb*, Assistant professor of Virology Department, Faculty of Veterinary Medicine, Cairo University, *Dr. Mahmoud Abo- Talab* Researcher of virology, CLEVB, and *Dr. Nahed Yehia* Researcher of virology in AHRI for their supervision and keen guidance executing this study to its final resort.

I would like to express my deep gratitude to *prof. Dr. Ahmed Abdel EL-Ghani EL-Sanousi* for his patient guidance, his valuable and constructive suggestions during the planning and development of this research work, his enthusiastic encouragement and useful critiques of this research work.

prof. Dr. Aziza M. Amer Professor of Pharmacology, Faculty of Veterinary Medicine, Cairo University for her technical support, her useful and constructive recommendations on this study.

I am particularly grateful for the valuable assistance & professional guidance given by *Dr. Ayman H.M. EL-Deeb* during this research study.

I would also like to offer my special thanks & my very great appreciation to *Dr. Mahmoud Abo- Talab*, for his valuable and constructive suggestions during the planning and development of this research work. His professional guidance and assistance in keeping my progress on schedule.

My colleagues in CLEVB for the co-operation along the duration of the study period.

Finally, I am really feel thankful and record my grateful acknowledgment to *my family* for encouragement and support me.

