شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

شبكة المعلومات الجامعية

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جامعة عين شمس

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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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HANAA ALY

Cairo University
Faculty of Veterinary Medicine
Department of Medicine and Infectious Diseases

SUPERVISION SHEET

Comparative Studies on Clinical and Subclinical Mastitis in Dairy Cattle

Thesis presented by:

Samah El Sayed Mahmoud El Saman

(B.V.Sc., 2012, M.V.Sc., 2018)

Faculty of veterinary medicine, Cairo University For

The degree of Ph.D.

(Infectious Diseases)

Under Supervision

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2021

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APPROVAL SHEET

This is to approve that, the dissertation presented by **Mrs. Samah Elsayed Mahmoud Elsaman**

Submitted to **Cairo University**

Entitled: **Comparative studies on clinical and subclinical mastitis in dairy cattle**

For the degree of **Ph.D. (Infectious Diseases)**

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Date: 12-7-2021

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Abstract

Bovine mastitis is a significant economic threat for the dairy sector of animal production worldwide including Egypt and is one of the multifactorial diseases in dairy farms, which has many risk factors that provoke the disease. The objectives of this study are, assess the effects of births, season, and lactation on the occurrence of clinical and subclinical mastitis, also the identification of the most common bovine intramammary infection-causing bacterial pathogens through isolation and molecular detection. A total of 295 pathogens of 6 different species were isolated from udder in dairy farms in five different governorates. The pathogens founded in this study were *Escherichia coli* contributed for (41.3%) of all cultured pathogens followed by *Staphylococcus aureus* (25.8%), *Streptococcus* agalac*tiae* (0.7%), *Streptococcus dysgalactiae* (16.9%), other *staphylococci* (5.4%) and other non-identified isolates (9.8%). The antibiotic resistance patterns were determined for 11 antibiotic drugs using the disc diffusion method following Clinical and Laboratory Standards Institute recommendations, the minimum inhibition concentration (MIC) using ofloxacine, cefquinome, tetracycline and amoxicillin clavulanate drugs and the molecular detection of udder pathogens and their virulence genes as *rfbE*O157 encoding gene as Shiga toxin-producing *E. coli* (STEC), coagulase gene and methicillin-resistance encoding gene (MecA). The multidrug resistance rates were higher among *Strep*tococcus species than among *E. coli strains, S. aureus, and other Staphylococcus species* (86%), (54.3%), (41.6%) and (28.6%) respectively. Tetracycline resistance was the most common in *E. coli*, while cefotaxime in *Streptococcus* species and penicillin in *Staphylococcus* species, were approximately 45.6, 90 and 75% respectively. Molecular investigation of extended-spectrum β-lactamases (ESBLs) and plasmid-mediated AmpC β-lactamases (PABLs) encoding genes among *E .coli* were reported in (100%) of the isolates encoded TEM-type ESBLs, none of which (0%) encoded OXA-type ESBLs, on the other hand, CTX-M-type ESBLs and SHV-type β-lactamases were encoded in (53.9%) and (4.7%) of the ESBL isolates, respectively and 27% exhibited CMYII-type PABLs. Plasmid-mediated colistin resistance encoding gene (*mcr-1*) was expressed in 1.6% of *E. coli* isolates. Finally, the minimum inhibition concentration (MIC) was performed on the milk itself as in vivo study. MIC values of four antibiotics, three in pure form (ofloxacine, tetracycline and cefquinome) and one in combination (amoxicillin clavulanate) were determined on milk samples as in vivo study.

Keywords: Bovine mastitis, Milk, intramammary infection, clinical and subclinical mastitis, risk factors, Antibiotic Resistance, ESBLs, PABLs, *mcr-1*and MIC.

DEDICATION

I dedicate this work to my family especially my parents, my husband, my sons and sisters for all the support they lovely offered and their continuous encouragement throughout this study.

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