

Table of Contents

الافتتاحية	I
Dedication	II
Acknowledgment	III
Abstract	IV
Abstract (Arabic)	V
Chapter one: Introduction	
1.1. Introduction	1
1.2. Rationale	3
1.3. Research questions	3
1.4. Objectives	3
1.4.1. General objective	3
1.4.2. Specific objectives	3
Chapter Two: Literature Review	
2. Literature review	4
2.1. The Genus <i>Enterobacter</i>	4
2.1.1. History	4
2.1.2. Classification	4
2.2. <i>Enterobacter aerogenes</i>	5
2.2.1. Definition	5
2.2.2. Habitat	5
2.2.3. Extracellular products	5
2.3.4. Mode of transmission	5
2.3.5. Pathogenesis and pathogenicity	5
2.2.6. Epidemiology	6
2.2.7. Laboratory diagnosis	6
2.2.8. Treatment	7
2.3. Types of ESBLs	7
2.3.1. TEM beta – lactamases (class A)	7
2.3.2. SHV beta – lactamses (class A)	8
2.3.3. CTX – M beta – lactamases (class A)	8
Chapter three: Materials and Methods	
3.1. Study design	10
3.1.1. Type of study	10
3.1.2. Bacterial strains	10
3.1.3. Study area	10
3.1.4. Duration of study	10
3.2. Activation of bacterial strains	10
3.2.3. Purification of bacterial strains	11
3.3. Molecular methods	11
3.3.1. Preparation of reagents	11

3.3.1.1. Primers	11
3.3.1.2. Preparation of 10x TBE buffer	12
3.3.1.3. Preparation of 1x TBE buffer	12
3.3.1.4. Preparation of agarose gel	12
3.3.1.5. Preparation of ethidium bromide	12
3.3.1.6. Preparation of loading dye	12
3.3.2. DNA extraction	12
3.3.2.1. Preparation of bacterial strains	12
3.3.2.2. Extraction procedure	13
3.4.3. Detection of DNA	13
3.4.4. Multiplex Polymerase Chain Reaction (PCR) techniques	13
3.4.4.1. Preparation of master mix	13
3.4.4.2. PCR amplification	14
3.4.4.3. Visualization of PCR products	14
Chapter Four : Results	
4.1 Identification of <i>E . aerogenes</i>	15
4.1.1 Purification of bacterial growth	15
4.1.2 Gram stain	15
4.2 Purification of (DNA)	15
4.3 PCR product	15
Chapter Five : Discussion, Conclusion and Recommendations	
Discussion .5.1	17
Conclusion .5.2	18
Recommendations .5.3	18
References	20