

TABLE OF CONTENTS

Chapter	Description	Page
1	INTRODUCTION AND LITERATURE REVIEW.....	1
1.1	<i>Introduction.....</i>	1
1.2	<i>Staphylococcus aureus.....</i>	2
1.3	<i>Epidemiology.....</i>	3
	1.3.1 : <i>Carriage.....</i>	3
	1.3.2: <i>Virulence factors.....</i>	4
	1.3.3: <i>Mode of transmission.....</i>	5
	1.3.4: <i>Laboratory diagnosis.....</i>	5
	1.3.5: <i>Treatment.....</i>	6
1.4	<i>Clinical Manifestations.....</i>	7
	1.4.1: <i>Hospital acquired MRSA</i>	7
	1.4.2: <i>Community-acquired MRSA</i>	8
	1.4.3: <i>CA MRSA vs. HA MRSA</i>	8
1.5	<i>Antibiotic resistance in S. aureus.....</i>	9
	1.5.1: <i>Methicillin resistance.....</i>	9
	1.5.2: <i>Vancomycin resistance.....</i>	12
1.6	<i>The Staphylococcus accessory genome.....</i>	12
	1.6.1: <i>The staphylococcal cassette chromosome mec (SCCmec)</i>	12
	1.6.2: <i>Panton-Valentine Leucocidin (PVL)</i>	15
1.7	<i>Molecular Techniques for MRSA Typing.....</i>	16
1.8	<i>Hypothesis and aims of the study.....</i>	17
2	MATERIALS AND METHODS.....	19
2.1	<i>Collection of S. aureus isolates.....</i>	19
2.2	<i>Identification of S .aureus.....</i>	19
2.3	<i>MRSA Determination By Oxacillin susceptibility.....</i>	19
2.4	<i>Antimicrobial Susceptibility Testing.....</i>	20
2.5	<i>Geno Type MRSA test.....</i>	21
	2.5.1: <i>DNA Extraction.....</i>	21
	2.5.2: <i>Multiplex Amplification with biotinylated primers.....</i>	22
	2.5.3: <i>Hybridization.....</i>	22
	2.5.4: <i>Interpretation</i>	23
2.6	<i>spa Sequencing.....</i>	24
	2.6.1: <i>DNA Amplification.....</i>	24
	2.6.2: <i>PCR Purification.....</i>	24
	2.6.3: <i>DNA sequencing.....</i>	25

<i>2.6.4: DNA analysis.....</i>	25
2.7 <i>Statistical analysis.....</i>	25
3 RESULTS.....	26
<i>3.1 Detection of MRSA by the Geno Type MRSA Direct.....</i>	26
<i>3.2 Antimicrobial susceptibility testing.....</i>	27
<i>3.3 Phylogenetic analysis.....</i>	29
4 DISCUSSTION.....	36
Conclusion and Recommendations.....	43
REFERENCES.....	46