Genomic Determination of Resistant Genes

By using PCR amplification, only four isolates (36.4%) were found to be positive for the presence of *nuc* gene while the other seven isolates (63.6%) were negative for the presence of *nuc* gene. *mecA* gene was present in 9 isolates (81.8%), including the coagulase isolates and the CoNS. Ten isolates (90.9%) possess the *ermC* gene, *femA* gene, and *msrA* gene. All of the isolates tested (100%) did not possess *ermA* and *ermB* gene. In contrast, all of the tested isolates (100%) conferred resistance to lincosamides as they possess *linA* gene. None of the isolates possessed all the three combinations of the *erm* genes. The *erm* gene is mostly found in the isolates that possess the *mecA* gene. The prevalence of the resistant genes among the 11 isolates is shown in table 4. Moreover, the resistant genes within each isolate were shown in table 5.

In comparison with the coagulase test (Table 3), only one coagulase isolate tested showed the presence of the *nuc* gene. However, three CoNS isolates possess the *nuc* gene. The *mecA* gene which confers resistance to methicillin was detected in nine isolates (81.8%) whereas only two isolates showed resistance to methicillin in antibiogram typing.

Table 3. Antibiogram typing among coagulase-positive isolates and coagulase-negative isolates

Antimicrobial Agents	Coagulase Positive (N=13)			Coagulase Negative (N=57)			General For All Isolates (N=70)		
	S	I	R	S	I	R	S	I	R
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Cefoxiton	13(100)	-	-	56(98.2)	-	1 (1.8)	69(98.6)	-	1(1.4)
Chloramphenicol	13(100)	-	-	56(98.2)	1(1.8)	-	69(98.6)	1(1.4)	-
Oxacillin	13(100)	-	-	56(98.2)	-	1(1.8)	69(98.6)	-	1(1.4)
Vancomycin	13(100)	1(7.7)	-	57(100)	-	-	70(100)	-	-
Erythromycin	12(92.3)	-	-	48(84.2)	5(8.8)	4(7.0)	60(85.7)	6(8.6)	4(5.7)
Trimethoprim	13(100)	-	-	52(91.2)	2(3.5)	3(5.3)	65(92.8)	2(2.9)	3(4.3)
Penicillin G	-	-	13(100)	12(21.1)	-	45(78.9)	12(17.1)	-	58(82.9)
Ampicillin	-	-	13(100)	11(19.3)	-	46(80.7)	11(15.7)	-	59(84.3)
Methicillin	13(100)	-	-	55(96.4)	1(1.8)	1(1.8)	68(97.2)	1(1.4)	1(1.4)
Tetracycline	12(92.3)	-	1(7.7)	56(98.2)	-	1(1.8)	68(97.1)	-	2(2.9)
Gentamycin	13(100)	-	-	57(100)	-	-	70(100)	-	-

Table 4. Prevalence of resistant genes in 11 isolates

Resistant genes	Coagulase-positive isolates (n=1)		Coagulase-negative isolates (n=10)		General for all isolates (n=11)	
	Positive	Negative	Positive	Negative	Positive	Negative
nuc	1 (100%)	-	3 (30%)	7 (70%)	4 (36.4%)	7 (63.6%)
mecA	-	1 (100%)	9 (90%)	1 (10%)	9 (81.8%)	2 (18.2%)
ermA	-	1 (100%)	-	10 (100%)	0	11 (100%)
ermB	-	1 (100%)	-	10 (100%)	0	11 (100%)
ermC	1 (100%)	-	9 (90%)	1 (10%)	10 (90.9%)	1 (9.1%)
femA	1 (100%)	-	9 (90%)	1 (10%)	10 (90.9%)	1 (9.1%)
msrA	1 (100%)	-	9 (90%)	1 (10%)	10 (90.9%)	1 (9.1%)
linA	1 (100%)	-	10 (100%)	-	11 (100%)	0