Supplementary Material

Prevalence, Multiple Antibiotic Resistance and Virulence Profile of Methicillin-Resistant *Staphylococcus aureus* (MRSA) in Retail Poultry Meat from Edo, Nigeria

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**Supplementary Table 1**. Primers used in this study

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Target genes** | **Primer sequences (5' →3')** | **Size (bp)** | **References** |
| *Staphylococcus aureus* | *nuc* | F:GCGATTGATGGTGATACGGTT  R:AGCCAAGCCTTGACGAACTA AAGC | 270 | Brakstad *et al*. (1992) |
| Coagulase | *coa* | F:CGAGACCAAGATTCAACAAG  R:AAAGAAAACCACTCACATCA | 730 | Aslantas *et al*. (2007) |
| Staphylococci protein A | *spa* | F:CAAGCACCAAAAGAGGAA  R:CACCAGGTTTAACGACAT | 320 | Frenay *et al*. (1996) |
| Panton valentine leucocidin | *Pvl* | F:ATCATTAGGTAAAATGTCTGGACATGATCCA R:GCATCAAGTGTATTGGATAGCAAAAGC | 433 | McClure *et al*. (2006) |
| Haemolysins | *Hla* | F:CTGATTACTATCCAAGAAATTCGATTG  R:CTTTCCAGCCTACTTTTTTATCAGT | 209 | Jarraud *et al*. (2002) |
|  | *Hlb* | F:GTGCACTTACTGACAATAGTGC  R:GTTGATGAGTAGCTACCTTCAGT | 309 | Jarraud *et al*. (2002) |
| Enterotoxins | *sea* | F:GCAGGGAACAGCTTTAGGC  R:GTTCTGTAGAAGTATGAAACACG | 521 | Monday *et al*. (1999) |
|  | *see* | F:TACCAATTAACTTGTGGATAGAC  R:CTCTTTGCACCTTACCGCA | 171 | Monday *et al*. (1999) |
|  | *Seb* | F:GGACACTAAGTTAGGGAATTATGA  R:GCTCAGTTACACCACCATAC | 200 | Mohammed *et al*., 2016 |
|  | *Sed* | F:GTGGTGAAATAGATAGGACTGC  R:ATATGAAGGTGCTCTGTGG | 385 | Pereira *et al*. (2009) |
|  | *Sec* | F:GGTATGATATGATGCCTGCAC  R:GGTGGACTTCTATCTTCACACT | 111 | Mohammed *et al*. (2016) |
|  | *seg* | F:TGTATGGTGGTGTAACTGAGCA  R:TGGTGCAGGCATCATGTCATA | 272 | Mohammed *et al*. (2016) |
|  | *seh* | F:CAACTGCTGATTTAGCTCAG  R:GTCGAATGAGTAATCTCTAGG | 359 | Pereira *et al*. (2009) |
|  | *sej* | F:CATCAGAACTGTTGTTCCGCTAG  R:CTGAATTTTACCATCAAAGGTAC | 192 | Jung *et al*. (2015) |
|  | *sei* | F:CTCAAGGTGATATTGGTGTAGG  R:AAAAAACTTACAGGCAGTCCATCTC | 577 | Jung *et al*. (2015) |
|  | *sek* | F:TAGGTGTCTCTAATAATGCCA  R:TAGATATTCGTTAGTAGCTG | 293 | Omoe *et al*. (2005) |
|  | *Sem* | F:ATGCTGTAGATGTATATGGTCTAAG  R:CGTCCTTATAAGATATTTCTACATC | 473 | Fueyo *et al*. (2005) |
|  | *sel* | F:AATATATAACTAGTGATCTAAAGGG  R:TATGGAATACTACACACCCCTTATA | 359 | Fueyo, *et al*. (2005) |
|  | *Sen* | F:ATGAGATTGTTCTACATAGCTGCAAT  R:AACTCTGCTCCCACTGAAC | 680 | Jarraud *et al*. (2002) |
|  | *seo* | F:TGTAGTGTAAACAATGCATATGCAAATG  R:TTATGTAAATAAATAAACATCAATATGATGTC | 722 | Fueyo *et al*. (2005) |
|  | *ser* | F:AAACCAGATCCAAGGCCTGGAG  R:TCACATTTGTAGTCAGGTGAACTT | 700 | Fueyo *et al*. (2005) |
|  | *seq* | F:AAGAGGTAACTGCTCAAG  R:TTATTCAGTCTTCTCATATG | 285 | Yarwood *et al*. (2002) |
|  | *sep* | F:TTAGACAAACCTATTATCATAATGG  R:TATTATCATGTAACGTTACACCGCC | 272 | Fueyo *et al*. (2005) |
|  | *Seu* | F:TAAAATAAATGGCTCTAAAATTGATGG  R:ATCCGCTGAAAAATAGCATTGAT | 141 | Letertre *et al*. (2003) |
| Toxic shock syndrome toxin 1 | *tsst*-1 | F:GCTTGCGACAACTGCTACAG  R:TGGATCCGTCATTCATTGTTAT | 559 | Monday *et al*. (1999) |
| Exfoliative toxin B precursor | *Etb* | F:ACAAGCAAAAGAATACAGCG  R:GTTTTTGGCTGCTTCTCTTG | 226 | Jackson *et al*. (1986) |
| Exfoliative toxin A precursor | *Eta* | F:GCAGGTGTTGATTTAGCATT  R:AGATGTCCCTATTTTTGCTG | 93 | Lee *et al*. (1987) |
| Intercellular adhesion protein D | *ica*D | F:ATGGTCAAGCCCAGACAGAG  R:CGTGTTTTCAACATTTAATGCAA | 198 | Arciola *et al*. (2001) |
| Intercellular adhesion protein C | *ica*C | F:TAACTTTAGGCGCATATGTTTT  R:TTCCAGTTAGGCTGGTATTG | 400 | Arciola *et al*. (2005) |
| Intercellular adhesion protein B | *ica*B | F:CTGATCAAGAATTTAAATCACAAA  R:AAAGTCCCATAAGCCTGTTT | 302 | Arciola *et al*. (2005) |
| Intercellular adhesion protein A | *ica*A | F:ACAGTCGCTACGAAAAGAAA  R:GGAAATGCCATAATGACAAC | 103 | Arciola *et al*. (2005) |
| Methicillin resistance | *mec*A | F:AAAATCGATGGTAAAGGTTGGC  R:AGTTCTGCAGTACCGGATTTGC | 532 | Strommenger *et al*. (2003) |
| Beta-lactamase | *Bla*Z | F:ACTTCAACACCTGCTGCTTTC  R:TAGGTTCAGATTGGCCCTTAG | 240 | Martineau *et al*. (2000) |
| Tetracyclines | *tet*K | F:TTAGGTGAAGGGTTAGGTCC  R:GCAAACTCATTCCAGAAGCA | 718 | Aarestrup *et al*. (2000) |
|  | *tet*L | F:TCGTTAGCGTGCTGTCATTC  R:GTATCCCACCAATGTAGCCG | 267 | Ng *et al*. (2001) |
|  | *tet*M | F:GTGGACAAAGGTACAACGAG  R:CGGTAAAGT TCG TCACACAC | 406 | Ng *et al*. (2001) |
|  | *tet*O | F:AACTTAGGCATTCTGGCTCAC  R:TCCCACTGT TCCATATCGTCA | 515 | Ng *et al*. (2001) |
| Erythromycins | *erm*A | F:TATCTTATCGTTGAGAAGGGATT  R:CTACACTTGGCTTAGGATGAAA | 139 | Martineau *et al*. (2000) |
|  | *erm*B | F:CTATCTGATTGTTGAAGAAGGATT  R:GTTTACTCTTGGTTTAGGATGAAA | 142 | Martineau *et al*. (2000) |
|  | *erm*C | F:CTTGTTGATCACGATAATTTCC  R:ATCTTTTAGCAAACCCGTATTC | 190 | Martineau *et al*. (2000) |
| Aminoglycosides | *aac(6´)-Ie-aph(2´´)-Ia* | F:CCAAGAGCAATAAGGGCATACC  R:CACACTATCATAACCATCACCG | 347 | Schmitz *et al*. (1999) |
|  | *ant(4´)-Ia* | F:CTGCTAAATCGGTAGAAGC  R:CAGACCAATCAACATGGCACC | 172 | Schmitz *et al*. (1999) |
|  | *aph(3´)-IIIa* | F:CTGATCGAAAAATACCGCTGC  R:TCATACTCTTCCGAGCAAAGG | 268 | Schmitz *et al*. (1999) |
| Chloramphenicol | *cat::p*C194 | F:CAATCCAAGGAATCATTGAAATCGG  R:AAAGCCAGTCATTAGGCCTATCTG | 472 | Argudín *et al*. (2011) |
|  | *cat::p*C221 | F:TGGAAGTTGTAAATAAAAATAAAGTG  R:CAATCCAAGGAATCATTGAAATCGG | 269 | Argudín *et al*. (2011) |
|  | *cat::p*C223 | F:AGGATATGAACTGTATCCTGCTTTG  R:AATAATGAAACATGGTAACCATCAC | 464 | Argudín *et al*. (2011) |
| Trimethoprim | *dfr*D | F:CCCTGCTATTAAAGCACC  R:CATGACCAGATAACTC | 606 | Dale *et al*. (1995) |
|  | *dfr*K | F:CAAGAGATAAGGGGTTCAGC  R:ACAGATACTTCGTTCCACTC | 229 | Argudín *et al*. (2011) |
|  | *dfr*G | F:TGCTGCGATGGATAAGAA  R:TGGGCAAATACCTCATTCC | 405 | Argudín *et al*. (2011) |
| **SCCmec** |  |  |  |  |
| Type I | *ORF E008* | F:GCTTTAAAGAGTGTCGTTACAGG  R:GTTCTCTCATAGTATGACGTCC | 613 | Zhang *et al*. (2005) |
| Type II | *kdpE* | F:GATTACTTCAGAACCAGGTCAT  R:TAAACTGTGTCACACGATCCAT | 287 | Kondo *et al*. (2007) |
| Type III | *J1 III* | F:CATTTGTGAAACACAGTACG  R:GTTATTGAGACTCCTAAAGC | 243 | Milheirico *et al*. (2007) |
| Type IVa | *ORF CQ002* | F:GCCTTATTCGAAGAAACCG  R:CTACTCTTCTGAAAAGCGTCG | 776 | Zhang *et al*. (2005) |
| Type IVb | *J1* Ivb | F:AGTACATTTTATCTTTGCGTA  R:AGTCATCTTCAATATGGAGAAAGTA | 1000 | Okuma *et al*. (2002) |
| Type IVc | *Ivc* | F:TCTATTCAATCGTTCTCGTATT  R:TCGTTGTCATTTAATTCTGAACT | 677 | Ma *et al*. (2005) |
| Type IVd | *CD002* | F:AATTCACCCGTACCTGAGAA  R:AGAATGTGGTTATAAGATAGCTA | 1242 | Kondo *et al*. (2007) |
| Type IVh | *J1* | F:TTCCTCGTTTTTTCTGAACG  R:CAAACACTGATATTGTGTCG | 663 | Milheirico *et al*. (2007) |
| Type V | *ORF V011* | F:GAACATTGTTACTTAAATGAGCG  R:TGAAAGTTGTACCCTTGACACC | 325 | Zhang *et al*. (2005) |

**Supplementary Table 2**: Antibiotic susceptibility profile of the isolates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | ***Staphylococcus aureus* (*n*=110)** | | |
| **Antimicrobial class** | **Antibiotics** | **Resistance** | **Intermediate** | **Sensitive** |
| Penicillins | Penicillin G | 110(100) | NA | 0(0) |
| Glycopeptides | Vancomycin | 0(0) | 13(11.8) | 97(88.2) |
| Cephems | Ceftaroline | 43(39.1) | 13(11.8) | 54(49.1) |
| Lipopeptides | Daptomycin | 0(0) | 0(0) | 110(100) |
| Aminoglycosides | Gentamicin | 37(33.6) | 22(20) | 51(46.4) |
|  | Amikacin | 28(25.5) | 18(16.4) | 64(58.2) |
|  | Kanamycin | 33(30) | 21(19.1) | 56(50.9) |
| Macrolides | Azithromycin | 44(40) | 18(16.4) | 48(43.6) |
|  | Clarithromycin | 53(48.2) | 29(26.4) | 28(25.5) |
|  | Erythromycin | 49(44.6) | 26(23.6) | 35(31.8) |
| Lipoglycopeptides | Oritavancin | 0(0) | 0(0) | 110(100) |
|  | Teicoplanin | 0(0) | 0(0) | 110(100) |
| Tetracyclines | Doxycycline | 58(52.7) | 22(20) | 30(27.3) |
|  | Minocycline | 53(48.2) | 36(32.7) | 21(19.1) |
|  | Tetracycline | 64(58.2) | 32(29.1) | 14(12.7) |
| Fluoroquinolones | Ciprofloxacin | 71(64.6) | 16(14.6) | 23(20.1) |
|  | Levofloxacin | 84(76.4) | 12(10.9) | 14(12.7) |
|  | Moxifloxacin | 88(80) | 10(9.1) | 12(10.9) |
| Nitrofurantoins | Nitrofurantoin | 7(6.4) | 3(2.7) | 100(90.9) |
| Lincosamides | Clindamycin | 62(56.4) | 19(17.3) | 29(26.4) |
| Folate pathway inhibitors | Trimethoprim-  sulfamethoxazole | 39(35.5) | 13(11.8) | 58(52.7) |
|  | Sulfonamides | 53(48.2) | 13(11.8) | 44(40) |
|  | Trimethoprim | 71(64.6) | 20(18.2) | 19(17.3) |
| Phenicols | Chloramphenicol | 21(19.1) | 11(10) | 78(70.9) |
| Oxazolidinones | Linezolid | 15(13.6) | 12(10.9) | 83(75.5) |
|  | Tedizolid | 0(0) | 21(19.1) | 89(80.9) |
| Ansamycins | Rifampin | 103(93.6) | 7(6.4) | 0(0) |

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