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:CTGATTACTATCCAAGAAATTCGATTGR:CTTTCCAGCCTACTTTTTTATCAGT | 209 | Jarraud *et al*. (2002) |
|  | *Hlb* | F:GTGCACTTACTGACAATAGTGCR: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:GGACACTAAGTTAGGGAATTATGAR:GCTCAGTTACACCACCATAC | 200 | Mohammed *et al*., 2016 |
|  | *Sed* | F:GTGGTGAAATAGATAGGACTGC R:ATATGAAGGTGCTCTGTGG | 385 | Pereira *et al*. (2009) |
|  | *Sec* | F:GGTATGATATGATGCCTGCACR:GGTGGACTTCTATCTTCACACT | 111 | Mohammed *et al*. (2016) |
|  | *seg*  | F:TGTATGGTGGTGTAACTGAGCAR:TGGTGCAGGCATCATGTCATA | 272 | Mohammed *et al*. (2016) |
|  | *seh*  | F:CAACTGCTGATTTAGCTCAG R:GTCGAATGAGTAATCTCTAGG | 359 | Pereira *et al*. (2009) |
|  | *sej*  | F:CATCAGAACTGTTGTTCCGCTAGR:CTGAATTTTACCATCAAAGGTAC | 192 | Jung *et al*. (2015) |
|  | *sei*  | F:CTCAAGGTGATATTGGTGTAGGR: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:AATATATAACTAGTGATCTAAAGGGR:TATGGAATACTACACACCCCTTATA | 359 | Fueyo, *et al*. (2005) |
|  | *Sen* | F:ATGAGATTGTTCTACATAGCTGCAATR:AACTCTGCTCCCACTGAAC | 680 | Jarraud *et al*. (2002) |
|  | *seo*  | F:TGTAGTGTAAACAATGCATATGCAAATGR:TTATGTAAATAAATAAACATCAATATGATGTC | 722 | Fueyo *et al*. (2005) |
|  | *ser*  | F:AAACCAGATCCAAGGCCTGGAGR:TCACATTTGTAGTCAGGTGAACTT | 700 | Fueyo *et al*. (2005) |
|  | *seq*  | F:AAGAGGTAACTGCTCAAGR:TTATTCAGTCTTCTCATATG | 285 | Yarwood *et al*. (2002) |
|  | *sep*  | F:TTAGACAAACCTATTATCATAATGGR:TATTATCATGTAACGTTACACCGCC | 272 | Fueyo *et al*. (2005) |
|  | *Seu* | F:TAAAATAAATGGCTCTAAAATTGATGGR: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:ACAAGCAAAAGAATACAGCGR:GTTTTTGGCTGCTTCTCTTG | 226 | Jackson *et al*. (1986) |
| Exfoliative toxin A precursor | *Eta* | F:GCAGGTGTTGATTTAGCATTR: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:TAACTTTAGGCGCATATGTTTTR:TTCCAGTTAGGCTGGTATTG | 400 | Arciola *et al*. (2005) |
| Intercellular adhesion protein B | *ica*B | F:CTGATCAAGAATTTAAATCACAAAR:AAAGTCCCATAAGCCTGTTT | 302 | Arciola *et al*. (2005) |
| Intercellular adhesion protein A | *ica*A  | F:ACAGTCGCTACGAAAAGAAAR: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:TCGTTAGCGTGCTGTCATTCR:GTATCCCACCAATGTAGCCG | 267 | Ng *et al*. (2001) |
|  | *tet*M | F:GTGGACAAAGGTACAACGAGR:CGGTAAAGT TCG TCACACAC | 406 | Ng *et al*. (2001) |
|  | *tet*O | F:AACTTAGGCATTCTGGCTCACR:TCCCACTGT TCCATATCGTCA | 515 | Ng *et al*. (2001) |
| Erythromycins | *erm*A | F:TATCTTATCGTTGAGAAGGGATTR:CTACACTTGGCTTAGGATGAAA | 139 | Martineau *et al*. (2000) |
|  | *erm*B | F:CTATCTGATTGTTGAAGAAGGATTR:GTTTACTCTTGGTTTAGGATGAAA | 142 | Martineau *et al*. (2000) |
|  | *erm*C | F:CTTGTTGATCACGATAATTTCCR:ATCTTTTAGCAAACCCGTATTC | 190 | Martineau *et al*. (2000) |
| Aminoglycosides | *aac(6´)-Ie-aph(2´´)-Ia* | F:CCAAGAGCAATAAGGGCATACCR:CACACTATCATAACCATCACCG | 347 | Schmitz *et al*. (1999) |
|  | *ant(4´)-Ia* | F:CTGCTAAATCGGTAGAAGCR:CAGACCAATCAACATGGCACC | 172 | Schmitz *et al*. (1999) |
|  | *aph(3´)-IIIa* | F:CTGATCGAAAAATACCGCTGCR:TCATACTCTTCCGAGCAAAGG | 268 | Schmitz *et al*. (1999) |
| Chloramphenicol | *cat::p*C194 | F:CAATCCAAGGAATCATTGAAATCGGR:AAAGCCAGTCATTAGGCCTATCTG | 472 | Argudín *et al*. (2011) |
|  | *cat::p*C221 | F:TGGAAGTTGTAAATAAAAATAAAGTGR:CAATCCAAGGAATCATTGAAATCGG | 269 | Argudín *et al*. (2011) |
|  | *cat::p*C223 | F:AGGATATGAACTGTATCCTGCTTTGR:AATAATGAAACATGGTAACCATCAC | 464 | Argudín *et al*. (2011) |
| Trimethoprim | *dfr*D | F:CCCTGCTATTAAAGCACCR:CATGACCAGATAACTC | 606 | Dale *et al*. (1995) |
|  | *dfr*K | F:CAAGAGATAAGGGGTTCAGCR:ACAGATACTTCGTTCCACTC | 229 | Argudín *et al*. (2011) |
|  | *dfr*G | F:TGCTGCGATGGATAAGAAR:TGGGCAAATACCTCATTCC | 405 | Argudín *et al*. (2011) |
| **SCCmec** |  |  |  |  |
| Type I | *ORF E008* | F:GCTTTAAAGAGTGTCGTTACAGGR:GTTCTCTCATAGTATGACGTCC | 613 | Zhang *et al*. (2005) |
| Type II | *kdpE* | F:GATTACTTCAGAACCAGGTCATR:TAAACTGTGTCACACGATCCAT | 287 | Kondo *et al*. (2007) |
| Type III | *J1 III* | F:CATTTGTGAAACACAGTACGR:GTTATTGAGACTCCTAAAGC | 243 | Milheirico *et al*. (2007) |
| Type IVa | *ORF CQ002* | F:GCCTTATTCGAAGAAACCGR:CTACTCTTCTGAAAAGCGTCG | 776 | Zhang *et al*. (2005) |
| Type IVb | *J1* Ivb | F:AGTACATTTTATCTTTGCGTAR:AGTCATCTTCAATATGGAGAAAGTA | 1000 | Okuma *et al*. (2002) |
| Type IVc | *Ivc* | F:TCTATTCAATCGTTCTCGTATTR:TCGTTGTCATTTAATTCTGAACT | 677 | Ma *et al*. (2005) |
| Type IVd | *CD002* | F:AATTCACCCGTACCTGAGAAR:AGAATGTGGTTATAAGATAGCTA | 1242 | Kondo *et al*. (2007) |
| Type IVh | *J1* | F:TTCCTCGTTTTTTCTGAACGR:CAAACACTGATATTGTGTCG | 663 | Milheirico *et al*. (2007) |
| Type V | *ORF V011* | F:GAACATTGTTACTTAAATGAGCGR: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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