**Supplementary information**

Genotypic validation of extended-spectrum β-lactamase and virulence factors in multidrug resistance *Klebsiellae pneumoniae* in an Indian hospital.

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**Table S1: List of primers used in this study**

|  |  |  |  |
| --- | --- | --- | --- |
| **Target**  **Region** | **Primer Sequence** | **Annealing Temperature (°C)** | **Reference** |
| TEM | F-5’-ATG AGT ATT CAA CAT TTC CGT G-3’ | 55 | Essack et al. 2001 |
| R-5’-TTA CCA ATG CTT AAT CAG TGA G-3’ |
| SHV | F-5’-TTA TCT CCC TGT TAG CCA CC-3’ | 55 | Essack et al. 2001 |
| R-5’-GAT TTG CTG ATT TCG CTC GG-3’ |
| CTX-M | F-5’-SCS ATG TGC AGY ACC AGT AA-3’ | 55 | Saladin et al. 2002 |
| R-5’-CCG CRA TAT GRT TGG TGG TG-3’ |
| K1 | F-5’-GGT GCT CTT TAC ATC ATT GC-3’ | 47 | Fang et al. 2007 |
| R-5’-GCA ATG GCC ATT TGC GTT AG-3’ |
| K2 | F-5’-GGA TTA TGA CAG CCT CTC CT-3’ | 45 | Fang et al. 2007 |
| R-5’-CGA CTT GGT CCC AAC AGT TT-3’ |
| mrkD | F-5’-CCA CCA ACT ATT CCC TCG AA-3’ | 52 | El Fertas-Aissani et al. 2013 |
| R-5’-ATG GAA CCC ACA TCG ACA TT-3’ |
| fimH-Type 1 | F-5’-ATG AAC GCC TGG TCC TTT GC-3’ | 55 | El Fertas-Aissani et al. 2013 |
| R-5’-GCT GAA CGC CTA TCC CCT GC-3’ |
| irp1 | F-5’-TGA ATC GCG GGT GTC TTA TGC-3’ | 57 | Pelludat et al. 2002 |
| R-5’-TCC CTC AAT AAA GCC CAC GCT-3’ |
| entB | F-5’-CTG CTG GGA AAA GCG ATT GTC-3’ | 57 | Wasfi et al. 2016 |
| R-5’-AAG GCG ACT CAG GAG TGG CTT-3’ |
| REP | F-5’-III ICG ICG ICA TCI GGC-3’ | 47 | Versalovic et al. 1991 |
| R-5’-ICG ICT TAT CIG GCC TAC-3’ |

**References:**

El Fertas-Aissani R, Messai Y, Alouache S, Bakour R (2013) Virulence profiles and antibiotic susceptibility patterns of *Klebsiella pneumoniae* strains isolated from different clinical specimens. Pathol Biol 61:209–16.

Essack SY, Hall LMC, Pillay DG, McFadyen ML, Livermore DM (2001) Complexity and diversity of *Klebsiella pneumoniae* strains with extended-spectrum β-lactamases isolated in 1994 and 1996 at a teaching hospital in Durban, South Africa. Antimicrob. Agents Chemother 45:88–95. doi: http://www.ncbi.nlm.nih.gov/pubmed/11120950doi: 10.1128/AAC.45.1.88-95.2001

Fang C-T, Lai S-Y, Yi W-C, Hsueh P-R, Liu K-L, Chang S-C (2007) *Klebsiella pneumoniae* Genotype K1: An emerging pathogen that causes septic ocular or central nervous system complications from pyogenic liver abscess. Clin Infect Dis 45:284–93.

Pelludat C, Hogardt M, Heesemann J (2002) Transfer of the core region genes of the *Yersinia enterocolitica* WA-C serotype O:8 high-pathogenicity island to *Y. enterocolitica* MRS40, a strain with low levels of pathogenicity, confers a yersiniabactin biosynthesis phenotype and enhanced mouse virulenc. Infect Immun 70:1832–41. doi: http://iai.asm.org/doi: 10.1128/IAI.70.4.1832-1841.2002

Saladin M, Cao VTB, Lambert T, Donay JL, Herrmann JL, Ould-Hocine Z, et al (2002) Diversity of CTX-M β-lactamases and their promoter regions from Enterobacteriaceae isolated in three Parisian hospitals. FEMS Microbiol Lett 209:161–8. doi: 10.1016/S0378-1097(02)00484-6

Wasfi R, Elkhatib WF, Ashour HM (2016) Molecular typing and virulence analysis of multidrug resistant *Klebsiella pneumoniae* clinical isolates recovered from Egyptian hospitals. Sci Rep 6:38929. doi: http://www.nature.com/articles/srep38929doi: 10.1038/srep38929

Versalovic J, Koeuth T, Lupski R (1991) Distribution of repetitive DNA sequences in eubacteria and application to finerpriting of bacterial enomes. Nucleic Acids Res 1991;19:6823–31.