

Characterization of extraintestinal pathogenic *E.coli* (ExPEC) sequence type 131 and its H30 and H30-Rx subclones from Semnan province: first report of OXA-48 producing ST131 clone

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Abstract In view of the epidemiological success of ESBL producing lineages of *E.coli* and particularly of ST131, it is of significant interest to explore its prevalence in countries such as Iran and to determine clonal subgroup O16-ST131 and the H30 and H30-Rx subclones, antibiotic resistance, virulence and genetic architecture of this high risk clone. The ST131 clonal group accounted for 63(29.8%) of the 211 phylogroups B2, D and F selected isolates obtained from clinical samples in a tertiary care hospital. Fifty-seven (90.4%) and six (9.6%) of the ST131 isolates belonged to serogroups O25b and O16, respectively. O25b-ST131 and O16-ST131 isolates exhibited high rates of multidrug resistance (98.4% and 83.3%) and ESBL production (96.8% and 83.3%). The majority (56/57, 98.2%) of O25b isolates belonged to H30 subclone, and 24 of 56 H30 isolates belonged to H30-Rx subclone. Six O16-ST131 isolates were H30 negative. Among H30 isolates, H30-Rx subclone showed higher resistance score and was associated with CTX-M group 1 in comparison with non-Rx isolates. All the ST131 isolates except one O16 strain showed the ExPEC status. OXA-48 carbapenemase detected in eight isolates, including seven O25b and one O16, of which one O25b-ST131 isolate detected as carbapenem susceptible. The ST131 isolates comprised 15 ERIC clusters and O16 isolates remained distributed in 5 groups in cluster with O25b-ST131 isolates.

In conclusion, this is the first report for the presence of MDR, CTX-M-positive O25b/O16-ST131 isolates in Iran. Despite the lower prevalence and virulence traits of O16-ST131 compared to O25b-ST131, higher resistance rates to β -lactam antibiotics may indicate the importance of this subgroup in the spread of MDR *E.coli* isolates.

Key words: extraintestinal pathogenic *E.coli*, ST131 clone, Semnan province