

O1148 **The first ever report of mutation and inactivation of mgrB gene conferring colistin resistance in Klebsiella pneumoniae isolates of food origin**

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Background: *Mcr-1* and other variants of this gene are well-established genetic determinants conferring colistin resistance (Col-R) in *Enterobacteriaceae*, especially *E.coli* in food producing animals, environmental and human clinical samples. *Mcr* is not yet reported in non-human isolates in India. Various alterations in the *mgrB* gene are the commonest mechanism for Col-R in *K. pneumoniae* in human clinical isolates. Insertion Sequences (ISs) inactivating *mgrB* gene are considered to be the main reason behind the recent change in epidemiology of Col-R *K.pneumoniae* in hospitals, from sporadicity to clonality. In the global literature, there are no published reports of *mgrB* mutation or ISs conferring Col-R in food or environmental samples.

Materials/methods: *Mcr-1* PCR was done on Col-R *E.coli* and *K. pneumoniae* isolates from various food materials including poultry, meat, fish and vegetables collected from Chennai, India. *MgrB* PCR and Sanger sequencing were done on selected *K. pneumoniae* isolates.

Results: Of the 72 isolates screened, three *E. coli* were found to harbour *mcr-1*. Whole genome analysis was done for one of the *mcr-1 E. coli* isolates. The accession number of *mcr-1* gene is PPXA01000133.1. Of the 8 *K. pneumoniae* isolates tested, five had mutations in *mgrB* gene. One of the *K. pneumoniae* isolates belonging to ST347 has a premature stop codon at 20th amino acid. Another *K. pneumoniae* was found to contain phenylalanine in place of isoleucine at the 45th amino acid. Three isolates were associated with IS903 Insertion sequences. In two of these isolates, IS903 was found to flank *mgrB* gene, disrupting the gene in one isolate. Another isolate, had intact *mgrB* till 15th amino acid followed by insertion of IS903B disrupting the protein.

Conclusions: This is the first report of *mcr-1* positivity in food isolates from India. This is also the first report in the global literature on *mgrB* mutation and its inactivation by Insertion Sequences conferring colistin resistance in *K. pneumoniae* in food samples. This finding has enormous public health implication, with potential for food chain transmission of *mgrB* gene via Insertion sequences to humans.