

Extended-spectrum β -lactamases producing multidrug resistant E. coli among dogs, cats and their owners in Pakistan

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Abstract

Infections caused by multidrug resistant (MDR) E. coli strains are common both in humans and animals. In particular, the pet animals have been considered as a potential carrier of MDR E. coli. Therefore, this study was designed to detect the ESBL producing E. coli isolates in companion animals, their owners and veterinary professionals. A total of 105 rectal swabs from pets (n=45), their owners (n=45) and veterinary professionals (n=15) were screened for the presence of ESBL producing E. coli, MDR and their genetic relatedness.

A total of 73/105 (69.5%) ESBL producing E. coli were recovered from this study. ESBL E. coli isolates in dogs (18/22) and dog owners (13/22) were 81.8% and 59%, respectively. ESBL E. coli isolates in cats (17/23) and cat owners (13/23) were 74% and 56.5%, respectively. While these E. coli isolates in veterinary professionals (12/15) were 80%. Of these, isolates 23/73 (31.5%) isolates showed MDR phenotype. Resistance to ampicillin, cefotaxime, ciprofloxacin and nitrofurantoin AMP-CTX-CIP-F represented the most common pattern of MDR (17.4%). None of the isolate was resistant to tobramycin. Among the ESBL E. coli with MDR, PCR detected blaCTX-M as the most common ESBL genotype (19/23). CTX-M-1 group was found among all the 19 blaCTX-M positive E. coli. Furthermore, BOX-PCR fingerprints showed distinct clonal groups indicating high genetic diversity among CTX-M-1 producing E. coli isolates. The presence of multidrug resistant

E. coli in particular of ESBL class CTX-M-1 in dogs, cats, their owners and veterinary health workers pose a zoonotic threat for the spread of multidrug resistant bacteria.

Keywords: Antimicrobial resistance, ESBL-producing E. coli, pets, zoonosis

Biography

I Have completed my D.V.M from University of Agriculture Faisalabad and then Mphil degree in microbiology from GCUF Faisalabad. Currently I am doing Ph.D in microbiology from university of agriculture Faisalabad.

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