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Comparative diversity of bacterial population and phylogenetic analysis of K99 fimbrial gene of ETEC isolated from healthy and diarrheic calves, Punjab, Pakistan

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Calf diarrhea among dairy herds in Pakistan is a major cause of neonatal calf mortality causing immense economic losses in terms of high morbidity and mortality. It is a complex disease caused by several types of bacteria especially Enterotoxigenic *Escherichia coli* (ETEC). In Pakistan, little information is available about ETEC sequence data and relatedness with geographically distributed strains. In present study from ten districts of Punjab province rectal feces were collected from healthy and diarrheic (n=400) cattle and buffalo calves of age less than 3 months. These samples were processed for bacterial isolation, biochemical identification and subsequently sequencing of 16S rRNA and K99 fimbrial gene of ETEC. The results indicate that the prevalence of *E. coli* was significantly high in both cattle and buffalo diarrheic calves ($P<0.00$) followed by *Salmonella* species. *Klebsiella pneumoniae* was significantly found from all healthy cattle calves ($P<0.002$), followed by *Enterobacter aerogenes* ($P=0.005$). Whereas, in diarrheic buffalo calves, *Enterobacter aerogenes* ($P<0.021$) followed by *Klebsiella pneumonia* ($P<0.048$) and *Enterobacter cloacae* ($P<0.036$) were found while no isolation of *Proteus mirabilis*. The characterization and phylogenetic analysis of K99 gene and 16SrRNA indicates that the local strain has evolved from the strains of geographically diverse regions and is distantly related. This difference in genetic makeup of local ETEC may depict the possibility of recombination within a clonal structure. Additional studies are required to ascertain the spatial distribution of bacterial pathogens of calf diarrhea and control measures to reduce the morbidity and mortality in calves' population of Pakistan.

Biography

Tahir Yaqub has completed his PhD in Veterinary Microbiology in 1998 from University of Agriculture, Faisalabad, Pakistan and Postdoctoral studies from Institute of Animal Health, Compton, UK in 2008. He is the Professor of Microbiology at University of Veterinary and Animal Sciences of Lahore. He has published more than 50 papers in reputed journals and has been serving as an Editorial Board Member of repute. He is a Senior Member of the University of Veterinary & Animal Sciences Lahore.

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