

International E-Conference on

ANIMAL SCIENCE AND VETERINARY MEDICINE

March 21-22, 2022 | Webinar

Migratory birds: the silent carrier of multidrug resistant bacterial pathogens!

Prof. Dr. Md. Tanvir Rahman

Department of Microbiology and Hygiene, Faculty of Veterinary Science, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh

Antimicrobial resistance (AMR) poses a major threat to human health globally. Migratory birds could be a potential source of antibiotic-resistant (ABR) bacteria. Not much is known about their role in the transmission of ABR in Bangladesh. In this study, 66 freshly dropped fecal materials of migratory birds were analyzed for isolation and identification of bacteria based on cultural properties, biochemical tests, and PCR. Disk diffusion test and PCR were also done to detect resistance phenotype and genotype. Among the 66 samples, 60.61% were positive for *Enterococcus* spp. 21.21% for *Salmonella* spp. and 39.40% for *Vibrio* spp. *Enterococcus* isolates were frequently found resistant (100–40%) to ampicillin, streptomycin, meropenem, erythromycin, and gentamicin; *Salmonella* resistant (72–43%) to chloramphenicol, tetracycline, ampicillin, streptomycin, and erythromycin; and *Vibrio* spp. resistant (77–31%) to vancomycin, ampicillin, erythromycin, tetracycline, and streptomycin. In addition, 60% *Enterococcus* spp., 85.71% *Salmonella* spp., and 76.92% *Vibrio* spp. isolates were MDR in nature. In addition, 55 *E. coli* isolates including 21 ESBL producer and MDR. Genes encoding resistance to tetracycline (tetA, 100%, tetB, 31.43%), fluoroquinolone (qnrA, 35.71%; qnrB, 25%), and streptomycin (aadA1) were detected in the isolated *E. coli*. All the ESBL-producing *E. coli* isolates harbored at least two or more beta-lactamase genes e.g., *bla*TEM, *bla*CTX-M, *bla*CMY, and *bla*SHV. Interestingly many of these *E. coli* also carried APEC-specific genes- *fimC* (67.27%), *iucD* (29.09%), and *papC* (5.45%). Frequent detection of MDR bacteria from migratory birds travelling to Bangladesh suggests their potentiality to carry and spread ABR bacteria and are of great public health concern. We recommend these birds to be kept under AMR surveillance program to minimize the potential risk of contamination of one health components to reduce AMR-related hazards.

Keywords: Antibiotic resistance, Migratory birds, Transmission, MDR, Genotype, ESBL, One health

Biography:

Dr. Md. Tanvir Rahman is a Professor in the Department of Microbiology and Hygiene at Bangladesh Agricultural University (BAU) and the Director of Professor Mohammad Hossain Central Laboratory of BAU. His academic qualification includes DVM from Bangladesh Agricultural University, MSc from University of Guelph, Canada, PhD from University of Warwick, UK and Postdoc from the Max Planck Institute for terrestrial Microbiology, Germany. His major responsibilities are teaching, research and supervision. Prof. Rahman is currently leading a research group working on antimicrobial resistance, host-microbes interaction, ecology, vaccine, food hygiene, and public Health at BAU.

Dr. Rahman is also an Adjunct Visiting Professor, Xinxiang University, Henan, China, General Secretary, Bangladesh Society for Veterinary Education and Research, Member of Technical expert committee for the development of AMR surveillance protocol, Government of Bangladesh and Member of the Technical Committee on Biological Risk and Biosecurity, Bangladesh Food Safety Authority, Government of Bangladesh.

Earlier Prof. Rahman worked as the Senior Regional Vaccine Consultant of Government of the People's Republic of Bangladesh and Head of the Department of Microbiology and Hygiene, Bangladesh Agricultural University, He has published around 131 papers in national and International peer-reviewed journals and supervised and co-supervised 85 MS and PhD students and complete several research projects in home and abroad. Prof. Rahman is also working as editor and reviewer for several International peer reviewed Journals including Bangladesh Veterinary Journal, Antibiotics (MDPI), Veterinary Infectious Diseases (Frontiers in Veterinary Science), Microbiological Research (Elsevier), Veterinary World (India), Journal of Veterinary Science (Korea) etc.