Sub-themes/relevant fields: Recent Advances in Biotechnology

Presentation format: Oral

Isolation, Identification and Characterization of *Salmonella* Species from Diarrheal Patients Using Phenotypic and Molecular Methods

S. Sultana[a], M. F. Ali[a], R. Sultana[a], F. Z. Suha[a], S. Sarker[a], J. Islam[a], S. Mahmud[a], A.K.M. Mohiuddin[a], A. H. Talukder[a]*, and K. A. Talukder[b].

[a] Department of Biotechnology and Genetic Engineering, MawlanaBhashani Science and Technology University, Santosh, Tangail, Bangladesh. [b]Enteric Microbiology Laboratory, International Centre for Diarrhoeal Disease Research, Mohakhali, Dhaka.

Abstract

Background: Diarrheal diseasecaused by infectious pathogens, such as, *Shigella*, *Salmonella*, *Vibrio cholerae*, and pathogenic *E. coli* is a significant cause of morbidity and mortality in developing countries like Bangladesh.The present study was carried out on prevalence Salmonella species among hospitalized diarrhoeal patients at Tangail, since no study has yet been done here on the prevalence of this pathogen. **Methods:** A total of 229 stool samples collected from diarrheal patients admitted at Sheikh Hasina Medical College and Hospital, Tangail between May, 2018 and February 2020 were cultured and *Salmonella*-like organisms (SLOs) were isolated and identified using the standard microbiological and biochemical methods and confirmed by PCR using *inv*A gene. Antibiotic susceptibility, plasmid profiling and conjugation were also performed following standard methods. **Results:** Of 229 patients, SLOs were identified from 23 (10%) samples based on biochemical test (presumptive identification). From these SLOs, 16 (7%) strains were confirmed by PCR using *inv*A gene, specific for Salmonella species. Antibiotic susceptibility test showed that all the strains were resistant to tetracycline followed by sulfamethoxazole trimethoprim (67%), nalidixic acid (56 %), erythromycin (56%), ampicillin (33%), ciprofloxacin (33%) and azithromycin (22%) respectively. About 89% isolated *Salmonella* were multidrug resistant. Of the isolated strains, 8 antibiotics resistance pattern were found.Plasmid analysis yielded multipleplasmids with size range from 1 to 115MDa and multiple patterns. A couple of strains showed multiple-resistance to antimicrobial agents and harbored more than one plasmid. Conjugations experiment showed that antibiotic resistance gene may chromosomal mediated or plasmid mediated or plasmid may be integrated into the chromosome. **Conclusion:** Antibiogram pattern and plasmid profile indicated that infection occurred due to the diverse strains of *Salmonella* species.The present study indicates that ciprofloxacin and azithromycin canbe used as a first line therapy for the treatment of *Salmonella* gastroenteritis.

Key words: pathogen, diarrhea, *Salmonella*- like organisms.

***Corresponding e-mail:** ashraf82_bmb@yahoo.com