

COMPARISON OF ANTIBIOTIC SENSITIVITY PATTERN BETWEEN PATHOGENIC AND ENTEROHAEMORRHAGIC ESCHERICHIA COLI ISOLATED FROM BUFFALO MEAT

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SUMMARY

Thirty seven strains of *E. coli* including nine strains of enterohaemorrhagic *Escherichia coli* (EHEC) of serogroups 0111 (5), 0172 (2), 0168 (1) and 010 (1), previously isolated from buffalo meat (buffen) were tested for *in-vitro* antimicrobial susceptibility against 18 antimicrobial agents. About 81.1% isolates showed multiple drug resistance (MDR) patterns and a total of 19 different resistance patterns were observed. *Escherichia coli* strains revealed highest sensitivity to norfloxacin (97.29%), ciprofloxacin (94.59%) and gentamicin (91.89%). The maximum resistance was observed against carbenicillin (86.48%) and ampicillin (64.86%). Intermediary resistance was observed to polymyxin-B (81.08%), neomycin (75.67%) and kanamycin (70.27%). All the nine EHEC serotypes were also highly resistant to carbenicillin (100%) and ampicillin (77.78%) but susceptibility of these isolates to norfloxacin, ciprofloxacin, gentamicin, chloramphenicol and amikacin was 100%. On the basis of multiple drug resistance patterns, all the 9 EHEC isolates were categorized into four resistotypes. The highly resistant group of antibiotics was carbenicillin and ampicillin which was present in 5 isolates. The increased resistance of EHEC strains to above antimicrobial drugs may be due to inadequate use of these antibiotics for prolonged period.

Key words: EHEC, buffen, antibiotic sensitivity, multiple drug resistance, resistotypes

Escherichia coli is an important cause of diarrhea in man and animals, and enterohaemorrhagic *E. coli* (EHEC) including non-0157 serotype has emerged as an important foodborne enteropathogen for humans causing haemorrhagic colitis (HC), haemolytic uremic syndrome (HUS) and thrombotic thrombocytopenic purpura (TTP). The treatment of EHEC infections with antimicrobials has not yet been recommended, but the experiences revealed antimicrobial agents are effective in reducing the severity of EHEC infection and alleviate the risk of HUS development (Lane and Alexander, 1990, Takeda *et al.*, 1998). Most of the EHEC are sensitive to commonly used antibiotics (Lane and Alexander, 1990, Wells *et al.*, 1991), but emergence of resistant EHEC strains to different antimicrobials (Kim *et al.*, 1994) is a major problem to human and animal health. Thus, there is emergent need for regular monitoring of antimicrobial drug resistance pattern of EHEC isolates. This communication describes *in-vitro* antibiotic sensitivity pattern of thirty seven strains of *E. coli* including nine EHEC strains isolated from buffalo meat (buffen).

Resistotyping of thirty seven *E. coli* strains

including nine strains of EHEC of serogroups 0111 (5), 0172 (2), 0168 (1) and 010 (1), previously isolated from buffalo meat was done against 18 antimicrobial drugs using modified disc diffusion technique (Bauer *et al.*, 1966). The antibiotic discs used in the present study included ampicillin (10mcg), amikacin (30 mcg), chloramphenicol (30 mcg), carbenicillin (100 mcg), cephotaxime (30 mcg), ciprofloxacin (5 mcg), colistin (10 mcg), gentamicin (30 mcg), kanamycin (30 mcg), neomycin (30 mcg), nalidixic acid (30 mcg), nitrofurantoin (300 mcg), norfloxacin (10 mcg), polymyxin-B (300 units), streptomycin (10 mcg), spectinomycin (100 mcg), tobramycin (10 mcg) and trimethoprim (5 mcg). Their zones of inhibition around the discs were measured and interpreted according to the zone size interpretative chart recommended by Hi-Media.

Antibiotic sensitivity pattern of all the *E. coli* isolates indicated the highest sensitivity to norfloxacin (97.29%) followed by ciprofloxacin and streptomycin (94.59%), colistin and gentamicin (91.89%), and trimethoprim and chloramphenicol (89.19%). Maximum resistance was observed against carbenicillin (86.48%) and ampicillin (64.86%). However, intermediate resistance was observed to antimicrobials like

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