Isolation, Identification, Serotyping and Antibiogram of *Escherichia coli* from Diarrhoic Poultry

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ABSTRACT

One hundred fifty fecal samples were processed for the isolation of *Escherichia coli* from diarrhoeic poultry birds. Eighty (53.33%) samples were found positive for *E. coli*. The most frequent serotypes was O60 (15.17%) followed by O17 (7.14%), O138 and O170 (each 4.29%). On antibiogram study, highest number of isolates (69, 98.57%) exhibited resistance against cefotaxime, followed by piperacillin (85.71%), tetracycline (82.86%), co-trimoxazole (52.86%), ceftizoxime (22.86%), pefloxacin (20%), ampicillin (15.71%), ofloxacin (14.26%) and ciprofloxacin and chloramphenicol (10% each). Only one isolate each (1.43%) showed resistance to gentamicin and amikacin.

Keywords: Drug sensitivity, *E. coli*, poultry, serotyping.

Colibacillosis caused by *E. coli* is a serious concern to poultry industry all over the world (Garg and Sethi, 1971, Singh *et al.*, 1997). It has been established as one of the common cause of mortality in domesticated birds (Kumar *et al.*, 2005). Furthermore, the organism is important as zoonotic and cause of severe food poisoning in man (Kumari *et al.*, 2002). *E. coli* has been the focus of immense international research driven by its recognition as a major cause of large scale epidemics and sporadic cases of gastrointestinal illness in animals and man (Deshmukh and Karpe, 2006).

Present study was undertaken to identify major serotypes of *E coli* prevailing in poultry in eastern Uttar Pradesh.

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Out of 150 faecal samples, 80 samples yielded *E. coli* based on biochemical and cultural characteristics. Of these, 70 isolates were serotyped as *E. coli* by National Salmonella and Escherichia Centre, Central Research Institute, Kasauli (H.P.) of which 3 were rough strains, 10 were untypable, while remaining isolates were serotyped as 02 (2), 04, 05, 07 (2), 09, 012 (2), 014, 017 (5), 020, 023, 025, 033, 042, 060 (11), 063, 068, 069, 071, 075, 077, 091, 097, 0101, 0102, 0116, 0119, 0121, 0132 (2), 0138 (3), 0140, 0147 (2), 0154, 0155, 0170 (3).

Majority of *E. coli* serotypes identified in this study were reported to be potential pathogens for both young and old birds, although the pathogenicity varies among different serotypes (Raji *et al*., 2003). In the present study, the predominant serotype found was O60 (15.71%), followed by O17 (7.14%) O138 and O170, (each 4.29%). The higher occurrence of O60 serogroups in present study is in accordance with Jindal *et al*. (1999), Srinivasan *et al*. (2003), Chousalkar *et al*. (2004), and Chatterjee and Kashyap (2006). Chatterjee and Kashyap (2006) isolated serotypes 077 and 05, while Mishra *et al*. (2002), Ghanbarpour and Amin, (2004) and Srinivasan *et al*. (2003) reported serotypes 02, 05, 020, 0101, and 0119 from poultry. Chousalkar *et al*. (2004) recovered serotypes 025, 068 and 077 from healthy pigeon. Variations in prevalence of serotypes might be due to geographical variation, and the difference in feed and water supply as per availability within the locality.

Out of seventy *E. coli* isolates tested for antibiogram (Table 1), highest 69 (98.57%) exhibited resistance against cefotaxime, followed by 60 (85.71%) against piperacillin, 58 (82.86%) against tetracycline, 37 (52.86%) against cotrimoxazole, 16 (22.86%) against cefixime, 14 (20%) against pefloxacin, 11 (15.71%) against ampicillin, 10 (14.26%) against ofloxacin and 7 (10%) isolates were resistant to ciprofloxacin and chloramphenicol both. Only one isolate each (1.43%) was found to be resistant against gentamicin and amikacin. Mishra *et al*. (2002) also reported higher resistance against cefotaxime. Kumar *et al*. (2005) reported 78.43% of the isolates to be resistant to oxytetracycline, 35.29% to pefloxacin and 3.92% to chloramphenicol. The highest sensitivity for gentamicin and amikacin may be attributed to the infrequent use of these antibiotics in poultry. Jindal *et al*. (1999) reported 73% of *E. coli* isolates to be sensitive to gentamicin, and Shah and Qureshi (2007) reported 90 to 100 % isolates to be sensitive to amikacin. Begum *et al*. (2003) found highest resistance for ciprofloxacin and gentamicin, and lowest to cefotaxime among the *E. coli* isolates from drinking water in Guwahati area (Assam). Development of drug resistance among pathogenic *E. coli* strains is a considerable threat to public health as these resistant strains are capable of transferring the drug resistance capability to other pathogens through episomal transfer of resistant (R) factor (Jindal *et al.*, 1999, Mishra *et al*., 2002).

The findings of present study strongly suggest that the occurrence of *E. coli* has been significant in spite of improved managemental practices adopted in poultry husbandry. The antibiotics should be used carefully in the field preferably after investigating the resistance pattern.

**References**


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