CHARACTERIZATION, SEROTYPING AND ANTIBIOGRAM OF *E.COLI* ISOLATED FROM FECAL SAMPLES OF KITES

M.M.Pawade, V.C.Ingle, P.A.Tembhurne, S.D.Budhe, V.C.Lahade, Manesh Kumar,P and D.R.Kalorey

Department of Veterinary Microbiology and Animal Biotechnology

Nagpur Veterinary College, MAFSU, Nagpur (Maharashtra)

Corresponding author : vkingle@rediffmail.com

Received 10-5-2013 Accepted 11-7-2013

ABSTRACT

The present study was carried out to study serotypes and drug resistance pattern of *E.coli* isolated from fecal samples of kites. Out of 40 fecal samples, 14 (35%) isolates revealed morphological, cultural and biochemical characteristics of *E.coli.*. On serotyping, out of 14 isolates, 3 were non typable, 3 were non-viable and 8 belonged to 6 serogroups viz., O:157(1), O:153(1), O:159(3), O:152(1), O:132(1) and O:2(1). Antibiotic sensitivity pattern showed highest sensitivity towards chloramphenicol, amoxicillin and gentamycin. The isolates were found resistant to ciprofloxacin, norfloxacin, cephalaxein, ceftriaxone, oxytetracline and neomycin.

KEY WORDS : Characterization, Serotyping, E. Coli, Kites

INTRODUCTION

The kite is a medium sized prey bird in the family *Accipitridae*. Birds feeding at refuse dumps, abattoirs and other sources of domestic refuse and offal may act as disseminators of bacterial pathogens associated with those food sources. The present study was carried out to investigate serotypes and drug resistance pattern of *E.coli* isolated from fecal samples of kites.

MATERIALS AND METHODS

Fourty fecal samples were collected from kites aseptically in a sterile container irrespective of age and sex and brought over ice bags to laboratory and processed for isolation and identification of *E.coli*. (Edward and Ewing, 1972).

Serotyping:

All the *E.coli* isolates obtained in pure culture were referred to National Salmonella and Escherichia Center, Central Research Institute, Kasuali, Himachal Pradesh for serotyping.

Antibiogram:

In- vitro antibiotic sensitivity pattern of the isolates were studied by using disc diffusion method (Bauer *et.al.,* 1966) against nine commercially available antibiotic disc of known concentration (Hi-Media, Mumbai) viz: amoxicillin (Am), gentamycin (G), ciprofloxacin (Cf), norfloxacin (Nx), cephalaxein (Cp), ceftriaxone (Ci), oxytetracline (O) chloramphenicol (C) and neomycin (N) were used. Results were recorded after 18 hrs of incubation at 37^0C, the diameter of zone of growth inhibition were interpreted as per manufacture's instructions.

RESULTS AND DISCUSSION

Out of 40 fecal samples processed, 14 (35%) *E.coli* isolates were recovered. Antibiotic sensitivity pattern showed highest sensitivity towards chloramphenicol (85.71%), amoxicillin (71.42%) and gentamycin (66.66%). The findings are in close agreement with the findings of Hossain *et al.* (2011) wherein sensitivity was shown towards gentamycin and amoxicillin by *E.coli* recovered from

migratory birds. In the present study, resistance was found towards 6 antibiotics i.e. ciprofloxacin (80%), norfloxacin (80%), cephalaxein (73.33%), ceftriaxone (73.33%), oxytetracycline (66.66%) and neomycin (66.66%). Resistance to more than 1 to 6 drugs and various combination of drug resistance patterns were observed in some waterfowl strains of *E.coli* (Misao Tsubokura *et al.,* 1995). Drug resistant bacteria were recovered from wild birds (Niida *et al.,* 1983) and migratory birds (Kanai *et al.,* 1981) creating the disease bridges to environmental pollution involving human and other animals and consequently may play a vital role in the spread of drug resistant *E.coli* isolates. This is the first report on isolation of *E.coli* O157 from Indian kites and is the first to implicate these wild birds as potential vectors for the dissemination of *E.coli* throughout the environment.

On serotyping, out of 14 isolates, 3 were non typable, 3 were non-viable and 8 belonged to 6 serogroups viz., O157(1), O153(1), O159(3), O152(1), O 132(1) and O2(1). Serotype O157 have been reported in wild birds (Wallace *et al.,* 1977) and serotype O152 and O153 have been reported in pigeon and crows respectively (Fukuyama 2003). Serotype O132 have been reported in two feral pigeons (Hideki Kobayashi *et al.,*2009). Serotype O157 has been recognized as an important cause of diarrhoea, haemorrhagic colitis and hemolytic uraemic syndrome in human beings (Anon,1995). This species could therefore have been passively infected with VTEC O157 following contact with livestock and isolation of serotype O157 in the present study from feces of kites warns the dissemination of such infection in human, and it may be that local bird populations play a role in the spread of the organism between farms and possibly over larger distances due to migratory habits.

Direct or indirect contact with animals and their products has been demonstrated to be important in transmission of VTEC O157 in human infections (Locking *et al.,* 2001). Cattle are regarded as the main animal reservoir for VTEC O157 (Paiba *et al.,* 2003), but the organism has also been recovered from a range of other domesticated animals, including sheep, goats, pigs, horses, and dogs (Synge, 2000). Among wild birds, VTEC O157 has been reported to be present in seagulls (Wallace *et al.,* 1997) and geese (Smith *et al*., 1998).

Based on the present findings it is suggested that management strategies that could reconcile the elimination of livestock carcasses with the conservation of avian scavengers, which may also have implications for reducing the risk of infection and dispersion of pathogens affecting farm animals and humans.

ACKNOWLEDGEMENT

The authors are thankful to the Director, National Salmonella and Escherichia Center, Central Research Institute, Kasauli, Himachal Pradesh for Serotyping of *E. coli* isolates.

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