SEROTYPING AND ANTIBIOGRAM OF E.COLI ISOLATES RECOVERED FROM BATS

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ABSTRACT

Thirty five fecal samples from bats irrespective of breed, age and sex were processed for isolation of enteric bacteria. Out of these, 7 were found positive for *E.coli.* All the isolates were subjected to hemolysin production, congo red dye binding ability, antibiotic sensitivity pattern and serotyping. One *E.coli* isolate was found positive for hemolysin production and one could bind congo red dye. The *E.coli* isolates were found highly sensitive towards ceftriaxone and ciprofloxacin followed by norfloxacin, cephalexin, amoxicillin, gentamycin and chloramphenicol. The isolates were found to be resistant towards oxytetracycline. Out of the 7 *E.coli* isolates, 2 were untypable and 5 were serotyped as O116 (3) and O13 (2).

KEYWORDS : *E.coli*, Bats, Serotyping

INTRODUCTION

Bats are one of the most widely distributed mammals in the world and they are reservoirs or carriers of several zoonoses. Bats and other wild animals has been implicated in the epidemiological cycles in the several emerging and re-emerging zoonoses (Meslin, 1997). Bats has also been documented as a carrier of pathogenic agents such as vampire borne rabies virus (Kobayashi, *et al.*,2006) and severe acute respiratory syndrome virus (SARS) or SARS like Coronavirus (Li, *et al.*,2005) Histoplasma capsulatum (Brown, 1988) and Leptospirosis (Smythe *et al.*, 2002), making them important in epidemiology of bacterial, viral and mycotic infections. Hence the present work was undertaken to study the serotyping and antibiogram of *E. coli* isolates from bats.

MATERIALS AND METHODS

In all 35 fecal samples from the bats irrespective of breed, age and sex were collected aseptically in sterile vials and brought over ice to laboratory for further investigations.

The fecal samples were inoculated into Nutrient broth and incubated at 37^{0}C for 6 hrs and then streaked on Mac-Conkey agar plates. Colonies showing pink colour i.e. lactose fermenting ability were inoculated on Eosin Methylene Blue agar. Isolated colonies showing metallic sheen were further identified on the basis of morphological, cultural and biochemical characteristics (Edward and Ewing, 1972).

All the *E.coli* isolates were inoculated on 5% blood agar plates to detect the hemolysin production pattern, an indicator of pathogenic potential. The hemolytic pattern was observed after incubation at 37^{0}C for 24 hrs.

The *E.coli* isolates were studied for Congo-red dye (CR) binding ability. The Congo-red (CR) binding ability of the *E.coli* isolates is associated with the presence of β-D glucon in bacterial cell wall and hence it is predicator of virulence and can be used as a marker for pathogenic *E.coli.* The Congo-red agar was prepared by adding 0.03% CR and 0.15% bile salts to tryptic soya agar (Berkhoff and Vinal,1986). Overnight incubated bacterial cultures were streaked on congo-red agar. Inoculated plates were incubated at 37^{0}C for 3 days. In positive test, colonies appeared as red

whereas, pale colonies were considered as negative.

Serotyping:

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

Antibiogram:

Antibiotic sensitivity pattern of the isolates was studied by employing disc diffusion method (Bauer *et al.*, 1966). Eight commercially available antibiotic disc of known concentration (Hi-Media, Mumbai) viz. amoxicillin (Am), ceftriaxzone (Ci), cephalaxein (Cp), chloramphenicol (C), ciprofloxacin (Cf), gentamycin (G), norfloxacin (Nx), and oxytetracycline (O) were used. Results were recorded after 24 hrs of incubation at 37^{0}C and the diameters of zone of growth inhibition were interpreted as per manufacturer's instructions.

RESULTS AND DISCUSSION:

Out of 35 fecal samples processed, 7 (20.00%) isolates of *E.coli* were recovered. Adesiyun, *et al.* (2009), reported 13% prevalence of *E.coli* in bats. The present study revealed that 1(14.28%) out of 7 *E.coli* strains were hemolytic, a phenotypic characteristic that has been related to the virulence characteristic in other animal species. The present findings are in close agreement with the findings of Adesiyun *et al.* (2009), who reported 10 % prevalence of hemolytic *E.coli.* Little higher incidence has been reported by Moreno *et al.* (1975) who conducted a bacteriological studies on stools of 100 bats in Brazil and recovered 29.5% hemolytic and non hemolytic *E.coli* isolates. Binding of Congo red dye (CR) with *E.coli* has been considered as pathogenicity marker. One (14.28%) out of 7 *E.coli* strains was found to show Congo red dye binding ability. Similar finding has been reported by Chousalkar *et al.* (2004) where one *E.coli* strain from pigeon was found to be CR positive.

In vitro antibiotic sensitivity of *E.coli*. isolates revealed highest sensitivity towards ceftriaxone and ciprofloxacin followed by norfloxacin, cephalexin, amoxicillin, gentamycin and chloramphenicol. The present finding on sensitivity of *E.coli* towards several antibiotics indicates that antibiotics are not much useful in bats. The isolates were found to be resistant towards oxytetracycline. The prevalence of resistance in the present study is less as compared to the findings of Adesiyun *et al.* (2009), who reported 80 per cent resistance. It has also been reported that resistance to antimicrobial agents among wildlife species may vary locally and may be associated with the use of antibiotics in animals and human beings (Shereley *et al.* 2000.).

Of the 7 *E.coli* isolates referred for serotyping, 2 were untypable and 5 were serotyped as O116 (3) and O13 (2). The serotype O116 have been reported from poultry (Sivakumar *et al.*, 2006). Similarly serotype O13 have been reported from diarrhoeic buffalo calves (Vagh and Jani,2010) and pigeons (Lahade *et al.*,2011). Several *E. coli* serotypes of varying pathogenicity potential are common in nature and can be reported from several sources without any contamination of direct circulation as an evidence of their communicability.

The occurrence of pathogenic *E. coli* warns the transmission of infection among other wild and domestic animals. The exchange of *E. coli* strains among bats, livestock, and humans should not be ignored.

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