SEROTYPING AND ANTIBIOGRAM OF E. COLI ISOLATES FROM ENDANGERED WILD CAPTIVE ANIMALS

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ABSTRACT

Seventeen fecal samples from wild captive animals were culturally screened. Seven were found to be positive for E.coli. These isolates were investigated for antibiogram, serotype and congo red binding assay. E.coli isolates belong to serotypes O17, O103, O147, O5, O52, O66 and rough type (1 each) indicating sharing of E.coli serotypes among wild life, domestic animals and human beings. All isolates were negative for congo red binding. Multi drug resistance observed among these isolates is of significance.

KEY WORDS: Wild animals, E.coli, Serotypes, Antibiogram.

INTRODUCTION

Wild animals are belived to be source of more than 70% of all emerging infections (Kuiken et al., 2005). Also there are reports of more than 25 infectious disease outbreaks associated with visit to animal exhibits (Bender and Shulman, 2004). E.coli causes colibacillosis and is zoonotic pathogen found in wild captive animals (Chakraborty, 1991). Recent Reports suggest zoo animals are reservoirs of E.coli harbouring antimicrobial genes (Ahmed et al., 2007). Considering paucity of data on E.coli isolates from wild captive animal, present study was conducted to know prevalence and antibiotic sensitivity pattern of E.coli recovered from captive wild life.

MATERIAL AND METHODS

For present study Shri Rajiv Gandhi zoological park, Pune, Maharashtra state, India served as a source of captive wild life. Freshly voided feces from caged animals, which include, 4 Leopards (Panthera pardus), 12 Tigers (Panthera tigris) of which 5 were white tigers and 1 Wolf (Canis lupis) were collected in sterile vials and brought over ice to laboratory.

All the samples were inoculated on blood agar plates to detect hemolysis. Samples were also inoculated on Mac Conkey and eosin methylene blue agar. Representative colonies suspected of E.coli were obtained in pure form and identified as per Standard methord.Congo red binding assay as a marker of invasiveness was carried out as per the technique of Berkhoff and Vinal (1986).

In-vitro antibiotic sensitivity was studied by disc diffusion method (Bauer et al., 1966) using 15 chemotherapeutic agents (HiMedia Mumbai, India). Antimicrobial agents viz. amoxycillin (Am), ciprofloxacin (Cf), cloxacillin (Cx), enrofloxacin (Ex), gentamicin (G), neomycin (N), nalidixic acid (Na), streptomycin (S), trimethoprim (Tr), chloromphenicol(C), penicillin (P), novobiocin (Nv), methicillin (M), tetracycline (T) and amoxycillin+clavulanic acid (Ac) were used. The diameter of zone of growth inhibition around the antibiotic disc after 24 hrs. of incubation at 37 C was recorded and interpreted as per manufacturer instruction.

RESULT AND DISCUSSION

Out of 17 fecal samples from apparently healthy animals, 7 isolates of E. coli were obtained. Recovered E.coli isolates belong to serotypes O17, O103, O147, O5, O52, O66 and rough type (1 each). White tigers served a source for O17, O103 and O147, tigers for O5 and O52 and wolf for O66. Serotypes O103, O5 and O52 are earlier reported in human from diarrheic condition (Bettelheim et al., 1990.). A healthy cattle is reported to be source of E.coli serotypes O17, O103 and O5 (Wieler et al., 1996; Pearce et al., 2006), whereas serotype O17 recovered from dog (Beutin et al., 1993) and O147 from pig suffering from dirrhoea (Khac et al., 2006) have been reported earlier. The present results indicate that wild life share bacterial flora with domestic animal and livestock.

All strains were non hemolytic and negative for Congo red binding. In-vitro antibiotic sensitivity of these isolates indicated highest sensitivity towards chloromphenicol (71.42%) followed by ciprofloxacin and gentamicin (57.14%), enrofloxacin, neomycin, streptomycin, trimethoprim and amoxycillin+clavulanic acid (42.90% each). Isolates exhibited multiple drug resistance and were found completely resistant to amoxycillin, cloxacillin and novobiocin. Antimicrobial resistance is making bigger splash in wild life. Earlier multiple drug resistance among the bacterial isolates recovered from wild animals housed at zoological parks has been documented (Pathak et al., 2005).

In summary, the result of the current study highlight zoo animal as a potential reservoir of antimicrobial resistant E. coli and alarms its threat to humans and other animals.

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