

**ANTIMICROBIAL RESISTANCE IN FAECAL COLIFORMS OF
CAPTIVE SRI LANKAN ELEPHANTS (*ELEPHAS MAXIMUS
MAXIMUS*)**

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The Sri Lankan elephant (*Elephas maximus maximus*) is an endangered species with a relatively small number held in captivity. Diarrhoea, indigestion and constipation are among the common gastrointestinal problems among captive elephants, although they are not frequently encountered. Coliforms are a major group of gastrointestinal microbes that may contribute to such disorders. Many coliforms, that are present in the gut as commensals, can cause opportunistic intestinal and extra-intestinal infections. Most importantly, they can acquire and transmit antimicrobial resistance (AMR) and can be used as indicator organisms for emergence of AMR in a population. Although it is well known that the emergence of AMR is a major issue in Sri Lankan livestock industry, little is known about the emergence of AMR in captive wildlife, including elephants. The objective of the current study was to determine the AMR patterns of faecal coliforms in a group of captive elephants.

Faecal samples collected from 24 elephants (mean age ~27, 10 females), participating in the annual Kandy Esala Perehera, were cultured on XLD media and incubated at 37°C for 24 hours. Coliforms were further identified by conventional biochemical methods and antimicrobial susceptibility tests were performed using Kirby-Bauer disk diffusion method for ampicillin, gentamicin, ciprofloxacin, sulpha-trimethoprim and chloramphenicol. A total of 24 isolates were recovered of which the majority (70.8%) was *Klebsiella* spp. while the rest were *Escherichia coli*. As expected in a population that has not been exposed to regular antibiotic use, all the isolates were only resistant to ampicillin. Ampicillin-metronidazole combinations are being used on captive elephants with diarrhoea and since these elephants are brought together several times a year for cultural events, it is possible that the observed AMR might be horizontally transmitted. Previous studies have found resistance to ampicillin in treatment of surface wounds in elephants. Although the present study showed resistance in faecal coliforms for ampicillin there is no information on the ineffectiveness of ampicillin for the treatment of diarrhoea in elephants in Sri Lanka. The ampicillin resistance might not have been evident at the field level because most veterinarians use a combination of ampicillin-metranidazole for the treatment of diarrhoea in elephants. Further work is necessary to elucidate the molecular basis of AMR among faecal coliforms in elephants.

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