

Antibiotic susceptibility of *Escherichia coli* isolated from free-living birds nesting in public areas within Kandy municipal limits: A preliminary study

Zarook MS¹, Razik H¹, Fazil KI³, Kottawatta KSA², Shiffana S³, Roshan RPN¹
Thilakarathne DS³

Introduction and Objectives: Free-living birds in urban areas can carry pathogenic microbes. *Escherichia coli*, a faecal bacterium that often contaminates food and water, and easily acquires and spreads antimicrobial resistance (AMR), posing a risk to human and animal health. In Sri Lanka, the role of urban birds in spreading AMR remains underexplored. This preliminary study assessed the AMR profile of *E.coli* from birds nesting in public areas of the Kandy Municipal Council (KMC).

Methods: Faecal samples were collected from 16 nesting sites in public areas within KMC limits using polythene sheets. Pooled faecal samples from each site were enriched in buffered peptone water, cultured on MacConkey agar, and presumptive *E.coli* colonies were subcultured on nutrient agar. Biochemical tests confirmed *E.coli* identity. Sixteen isolates were tested for antimicrobial susceptibility using the Kirby-Bauer disc diffusion method on Mueller-Hinton agar with six antibiotics: cefotaxime (30 µg), chloramphenicol (30 µg), ciprofloxacin (5 µg), gentamicin (10 µg), sulfamethoxazole/trimethoprim (25 µg) and ampicillin (10 µg), according to CLSI (2023) guidelines. *E.coli* ATCC 25922 reference strain served as quality control.

Results: All 16 *E.coli* isolates, each representing a different public site, were susceptible to cefotaxime and sulfamethoxazole/trimethoprim. Five percent (1/16) of the isolates showed resistance to ciprofloxacin, while 25% (4/16) exhibited resistance to each of the following: ampicillin, chloramphenicol and gentamicin. Among the *E.coli* isolates, 12.5% (2/16) were identified as multidrug-resistant (MDR), exhibiting resistance to three or more different antibiotic classes. Resistance to gentamicin and ampicillin was common among the MDR isolates.

Conclusion: This study shows that free-living birds in urban Kandy, Sri Lanka, can harbour *E.coli* resistant to commonly used antibiotics, posing a potential public health risk. Resistance is likely influenced by human-related sources such as improper drug disposal, and sewage or agricultural runoff. Birds foraging in such environments can acquire and spread resistant bacteria. The detection of MDR strains suggests these birds may act as environmental reservoirs, contributing to AMR spread in urban areas. Although the lack of species-level bird data is a limitation, the findings stress the need for ongoing AMR surveillance in urban wildlife and environments.

Keywords: *E.coli*, Antimicrobial, Resistance, Birds, Urban

¹International College of Business and Technology, Kandy, Sri Lanka

²Department of Veterinary Public Health & Pharmacology, University of Peradeniya, Sri Lanka

³Department of Veterinary Pathobiology, University of Peradeniya, Sri Lanka

Address for correspondence: Dr. Dulari S. Thilakarathne: Department of Veterinary Pathobiology, University of Peradeniya, Sri Lanka; Telephone: +94778881842; Email: dsamanthikat@gmail.com;

 <https://orcid.org/0000-0002-8790-033X>