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A preliminary study on isolation and characterization of potentially pathogenic bacteria from wild bird droppings around the Kandy Lake, Central Sri Lanka

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Birds are potential carriers of pathogens for different infectious zoonotic diseases. Different pathogens including, bacteria, fungi, viruses, and parasites carried by wild birds may affect humans through direct or indirect transmission. This study was mainly focused on the bacterial composition of wild bird droppings around the Kandy Lake area. Fifty samples of fresh bird droppings from House Crow (15), Little Cormorant (20), Rock Pigeon (05), Little Egret (05) and Black-crowned Night Heron (03) were collected at five different sample collection points using sterile swabs. Each Swab was dipped in 1 mL of 0.85% w/v saline solution, shaken well and kept for 30 minutes. After the pretreatment, 50 µL from each was spread on LB and M17 agar media. Plates were incubated at 37°C for 24 hours. Colony counts were taken and different morphotypes were sub-cultured. Isolates were Gram stained and morphologically identified. The highest count was obtained from House Crow (5.5 × 103 CFU/mL) while lowest was obtained from Rock Pigeon (3.6 × 103 CFU/mL). In total 20 different bacteria were isolated; 12% were Gram-positive and 88% were Gram-negative. Lactococcus sp. was obtained from all birds and individual organisms from Staphylococcaceae (Staphylococcus sp.), Enterobacteriaceae (Serratia sp., Enterobacter sp., Klebsiella sp., Proteus sp., and *E. coli*), Bacillaceae (*Bacillus* sp.) and Enterococcaceae (*Enterococcus* sp.) were morphologically identified. Both pathogenic (*Staphylococcus* sp., *E. coli*) and opportunistic pathogenic (Enterobacter sp.) bacteria were isolated from bird droppings which suggests that these birds can harbor potentially pathogenic bacteria, probably reflecting the presence of such isolates in their sources of food and/or water in the environment. These birds are not migratory birds, but often change their habitats within the city, according to their behaviors. This may lead to the transmission of those bacteria between birds. Since Kandy Lake area is highly populated, droppings can be in contact with humans via direct and indirect ways. This poses a public health hazard to the humans and to the environment if they accumulate in one place for a long period of time. Therefore, further studies should be carried out to determine the incidence of human infections by bird droppings in the Kandy Lake surrounding area.

Keywords: Zoonotic diseases, bird droppings, pathogenic bacteria, human infections

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