UNIVERSITI PUTRA MALAYSIA

OCCURRENCE OF SALMONELLA SPP. AND CAMPYLOBACTER SPP. IN EXOTIC BIRDS IN WETLAND, PUTRAJAYA

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2015

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It is hereby certified that we have read this project paper entitled "Occurrence of *Salmonella* spp.. and *Campylobacter* spp. in Exotic Birds in Wetland, Putrajaya" by Muhammad Ashraf bin Ibrahim and in our opinion it is satisfactory in terms of scope, quality and presentation as partial fulfilment of the requirement for the course VPD 4999 – Final Year Project.

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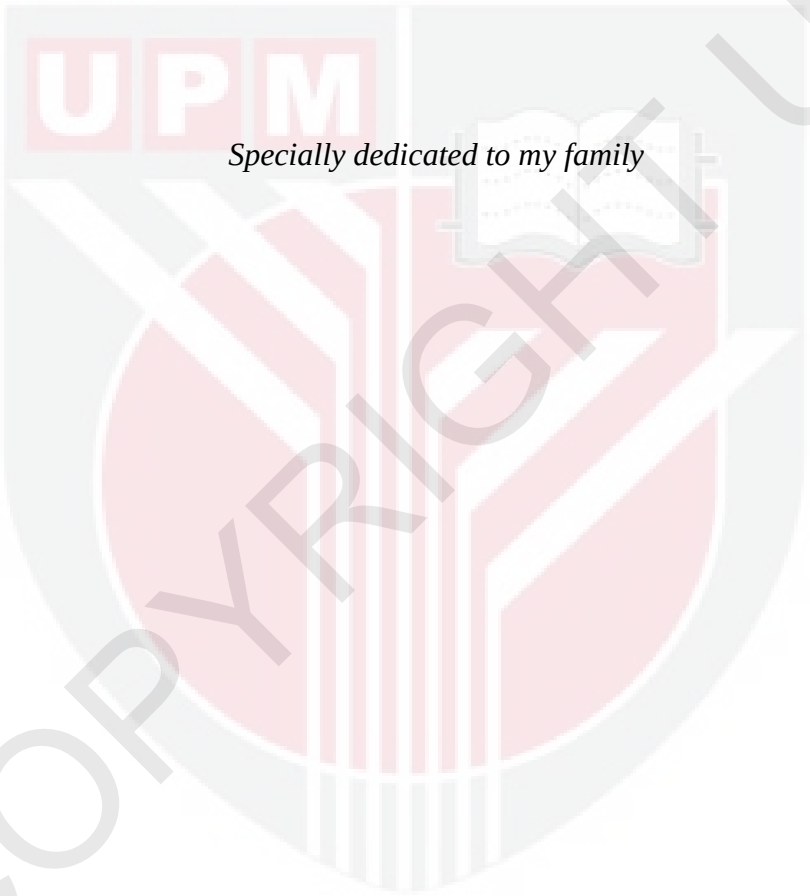
Specially dedicated to my family



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ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Perubatan Veterinar untuk memenuhi sebahagian daripada keperluan kursus VPD 4999 – Projek Ilmiah Tahun Akhir.

KEHADIRAN *SALMONELLA* SPP. DAN *CAMPYLOBACTER* SPP. PADA BURUNG EKSOTIK DI WETLAND PUTRAJAYA

Oleh

MUHAMMAD ASHRAF BIN IBRAHIM

2015

Penyelia: Prof. Madya Dr. Jalila Binti Abu

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Manusia dan alam, saling memerlukan. Itulah gambaran yang terbaik untuk menggambarkan Putrajaya Wetlands. Putrajaya Wetland merupakan tanah lembap air tawar yang pertama dibina dan terbesar di kawasan tropika. Walau bagaimanapun, Putrajaya Wetland bukan sahaja berfungsi sebagai penapis air yang cekap, tetapi juga sebagai habitat yang sesuai untuk hidupan liar dan eksotik hidup di tanah lembap dan berair yang sesuai untuk didiami. Walau bagaimanapun, burung-burung eksotik boleh menjadi pembawa patogen yang mungkin mempunyai risiko zoonotik.

Oleh itu, kajian ini dijalankan untuk memeriksa kehadiran dan rintangan antibiotik *Salmonella* spp. dan *Campylobacter* spp. dalam burung eksotik. Sampel swab Cloaca diambil dari 50 burung yang kelihatannya sihat dari empat kawasan dalam kuarantin, satu kolam flamingo dan satu kawasan Pelantar. Tiada *Salmonella* spp. telah diasingkan daripada 50 sampel yang terdiri daripada spesies burung air seperti Angsa hitam, Angsa mesir, Rajah shell duck, Greater flamingo, Burung pelican putih, Pink backed pelican dan Swan putih. *Campylobacter c*oli telah diasingkan sebanyak 7 (14.0%) daripada 50 sampel dari Angsa hitam, Burung pelican putih dan Swan putih. *Campylobacter lari* telah diasingkan daripada 2 (4.0%) daripada 50 sampel dari Angsa hitam sahaja. Tidak ada ujian kepekaan antibiotik telah dijalankan ke atas *Salmonella spp*. kerana tidak ada pertumbuhan jajahan terpencil. *Campylobacter coli* dan *Campylobacter lari* tidak terkesan kepada clindamycin (100%) dan sensitif kepada gentamycin (100%). 55.5% asingan tahan kepada satu antibiotik manakala 22% asingan tahan kepada dua antibiotik dan tidak ada asingan tahan kepada tiga antibiotik. Walau bagaimanapun, terdapat 22.2% asingan tahan kepada empat antibiotik, yang menunjukkan bahawa terdapat tahap MDR yang tinggi dari *Campylobacter* spp. diasingkan daripada burung eksotik di Wetland, Putrajaya.

Kata Kunci: Burung eksotik, *Salmonella* spp, *Campylobacter* spp, kejadian, rintangan antibiotik

ABSTRACT

An abstract of the project paper presented to the Faculty of Veterinary Medicine in partial fulfilment of the course VPD 4999 – Final Year Project.

OCCURRENCE OF *SALMONELLA* SPP. AND *CAMPYLOBACTER* SPP. IN WETLAND EXOTIC BIRDS IN WETLAND, PUTRAJAYA

By

MUHAMMAD ASHRAF BIN IBRAHIM

2015

Supervisor: Assoc. Prof. Dr. Jalila Binti Abu

Co-supervisor: Prof. Dr. Saleha Binti Abdul Aziz

Man and nature, side by side. That is the best words to describe Putrajaya Wetlands the first constructed freshwater wetland and the largest in the tropics. Nevertheless, Putrajaya Wetlands is much more than just an efficient water filter. It has become to some extent the real thing, a functioning wetland, a site with available water to varied exotic bird species and wildlife. However, the exotic birds as carrier of a number of pathogen may have possible zoonotic risk. Therefore, this study was

carried out to examine the presence and antibiotic resistance of *Salmonella* spp. and *Campylobacte*r spp. in exotic birds. Cloaca swab sample was taken from 50 apparently healthy birds from four compartment in quarantine areas, one flamingo pond and one view deck areas. There is no *Salmonella* spp. was isolated out of 50 samples which were from water birds species which included Black swan, Egyptian goose, Radjah shelduck, Greater flamingo, White pelican, Pink backed pelican and White swan. *Campylobacter coli* was isolated from 7 (14.0 %) out of 50 cloaca swabs samples from Black Swan, White Pelican and White Swan. *Campylobacter lari was isolated from* 2(4.0 %) out of 50 cloaca swabs samples from Black Swan only. There was no antibiotic sensitivity test were done on *Salmonella* spp. because there are no isolated colonies growth. *Campylobacter coli and Campylobacter lari* isolates were resistance to clindamycin (100%) and sensitive to gentamycin (100%). 55.5% isolates were resistant to one antibiotics while 22% were resistant to 2 antibiotics and there are no resistance to 3 antibiotics. However, there are 22.2% isolates resistant to four antibiotics, which indicate that there is high level of MDR from *Campylobacter* spp. isolated from exotic birds in Wetland, Putrajaya.

Keywords: Exotic birds, *Salmonella* spp., *Campylobacter* spp., occurrence, antibiotic resistance

1.0 INTRODUCTION

Putrajaya, the new Federal Government Administrative Center of Malaysia was developed by Putrajaya Holdings Berhad in 1996 and covers the area of 4,931 ha. The master plan for the development incorporates comprehensive policies and guidelines for landscaped areas for its estimated 330,000 inhabitants. Among the main green spaces provided in Putrajaya are Putrajaya Lake and Wetlands (600 ha). It is one of the largest fully constructed freshwater wetland in the tropics (Lim *et al.*, 1998). The swamp forest bordering entire Putrajaya wetland system connects habitats along the Putrajaya waterways.

Wetlands are one of the Earth's most valuable resources per unit area (Costanza *et al.* 1997). The wetland ecosystem offers a diversity of habitats to attract wildlife. It also functions as breeding grounds and nurseries for, invertebrates, mammals, reptiles, amphibians and fish (Perbadanan Putrajaya, 1999). The Wetlands Park of Putrajaya is the home of many aquatic faunas. There are 12 species of exotic birds such as Radjah Shelduck, Black swan, Egyptian goose, White pelican, Pink-backed pelican, Greater flamingo, White swan, Canadian goose, Muscovy, Pekin and Mandarin ducks. The term "water bird" refers to bird species dependent on aquatic habitats to complete portions of their life cycles (Sarker *et al.*, 2012).

Campylobacter spp and *Salmonella* spp. are the leading causes of zoonotic enteric infections in developed and developing countries, and their incidence is increasing even in countries with adequate public health surveillance (Ramos *et al.*, 2010). Well-known modes of transmission to humans include physical contact with

domestic animals, person-to-person spread, and consumption of contaminated food and water.

According to Berrang (2013), clinical infections of Campylobacter in humans are particularly common in immunosuppressed adults. The symptoms may include watery or sticky diarrhoea, fever, nausea, vomiting, abdominal pain, headache, muscle pain and the faeces may contain blood. Salmonellosis is an extremely common disease among humans. Following a 12 to 36 hour incubation period, symptoms of fever, headache, diarrhoea, abdominal pain, nausea and dehydration develop, which may lead to septicaemia or endotoxemia.

The justification of this project was there was no research done on the prevalence of *Salmonella* spp. and *Campylobacter* spp. in exotic birds in wetland area. This study site was chosen based on places frequented visited by the public, such as recreational parks for families and tourist attractions. Therefore, the hypothesis for this project was the presence of *Salmonella* spp. and *Campylobacter* spp. in exotic birds was low. Therefore, the objectives of this study were to detect the occurrence of *Salmonella* spp. and *Campylobacter* spp. in a group of exotic birds and to determine the antibiotic susceptibility of the isolates.

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