



UNIVERSITI PUTRA MALAYSIA

**COMPARISON OF PARASITE SPECIES AND BURDEN BETWEEN
APPARENTLY HEALTHY AND CLINICALLY ILL RED JUNGLE FOWL,
*Gallus gallus gallus***

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*Gallus gallus gallus***



A project paper submitted to the
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CERTIFICATION

It is hereby certified that we have read this project paper entitled “Comparison of Parasite Species and Burden between Apparently Healthy and Clinically Ill Red Jungle Fowl, *Gallus gallus gallus*”, by Zati Hidayah Binti Zaini and in our opinion it is satisfactory in terms of scope, quality, and presentation as partial fulfillment of the requirement for the course VPD 4999 – Project.

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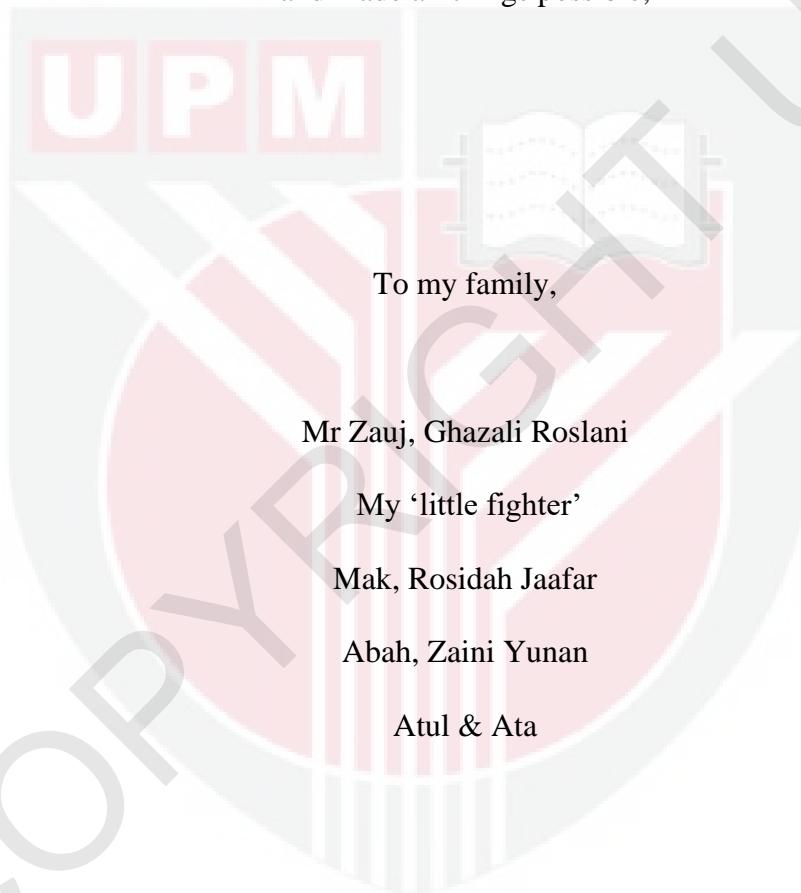
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DEDICATIONS

This project paper is dedicated to the One Almighty God, Allah, who had created me
and made all things possible,



And to all my teachers who have committed themselves towards the
noble cause of education.

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ABSTRAK

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

PERBANDINGAN SPESIS PARASIT DAN BEBANAN ANTARA AYAM

HUTAN YANG KELIHATAN SIHAT DAN KELIHATAN SAKIT,

Gallus gallus gallus.

Oleh

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2016

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Ayam hutan, *Gallus gallus* adalah salah satu daripada empat spesies ayam hutan yang ditemui di Asia. Ia dikenali sebagai moyang kepada ayam domestik (*Gallus domesticus*) disebabkan oleh penemuan yang meluas. Ayam ini apabila dijinakkan diperhatikan sangat mudah terdedah kepada penyakit yang menjelaskan ayam domestik. Oleh kerana terdapat hanya beberapa kajian yang dijalankan ke atas spesies ayam hutan terutamanya untuk membandingkan flora parasit antara burung sihat dan sakit, oleh itu kajian ini dijalankan bertujuan untuk mengenal pasti ektoparasit, endoparasit dan parasit darah yang dijangkiti oleh ayam hutan yang kelihatan sihat dan kelihatan sakit dan

untuk membandingkan beban parasit antara kedua-dua kumpulan ini. 12 ekor ayam hutan yang kelihatan sakit (yang menunjukkan simptom klinikal) dan empat ekor ayam hutan yang kelihatan sihat telah disampel dari sebuah ladang ayam hutan terletak di Jenderam Hulu, Selangor. Burung-burung ini telah diperiksa untuk ektoparasit, endoparasit dan parasit darah. Spesies parasit yang ditemui termasuk *Haemaphysalis wellingtoni*, *Lipeurus caponis*, *Menopon gallinae*, *Menacanthus stramineus*, *Goniodes dissimilis*, *Goniocotes hologaster* (ektoparasit); Capillaria sp, *Heterakis gallinarum*, *Raillietina cesticillus*, *Raillietina tetragona*, *Raillietina echinobothridia*, Eimeria sp, (endoparasit); *Plasmodium gallinaceum*, *Leucocytozoon sabrazesi*, Microfilaria sp., Trypanosome sp. (parasit darah). Hasil kajian menunjukkan bahawa tidak terdapat perbezaan yang signifikan di antara beban spesies parasit dalam ayam hutan yang kelihatan sihat dan yang kelihatan sakit kecuali hanya untuk kutu, *Lipeurus caponis*. Kesimpulannya, secara amnya, ayam hutan yang kelihatan sihat dan yang kelihatan sakit mempunyai spesies dan beban parasit yang sama yang menjangkiti mereka. Sesetengah organisma lain, mungkin bakteria atau virus boleh menyebabkan penyakit pada burung yang secara klinikalnya terjejas.

Kata kunci: *Ayam hutan, ektoparasit, endoparasit, parasit darah, ayam hutan yang kelihatan sihat, ayam hutan yang kelihatan sakit.*



ABSTRACT

Abstract of the project paper presented to the Faculty of Veterinary Medicine in partial requirement for the course VPD 4999 – Project

COMPARISON OF PARASITE SPECIES AND BURDEN BETWEEN APPARENTLY HEALTHY AND CLINICALLY ILL RED JUNGLE FOWLS,

Gallus gallus gallus.

By

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2016

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Co-supervisor: Assoc. Prof. Dr. Shaikh Mohamed Amin Babjee

The Red Jungle Fowl, *Gallus gallus* is one of the four species of jungle fowl found in Asia. It is known as the ancestor of the domestic fowl (*Gallus domesticus*) due to its widespread distribution. These birds when domesticated were observed to be very susceptible to the diseases affecting the domestic chickens. As there are only few studies conducted on the Red Jungle Fowl species especially comparing the parasite flora of healthy and sick birds, therefore this study is aimed to identify the ectoparasites, endoparasites and blood parasites harboured by the apparently healthy and clinically ill Red Jungle Fowl and to compare the burden of the parasites between these two groups.

12 clinically ill (those showing clinical symptoms) and four apparently healthy Red Jungle Fowl were sampled from a Red Jungle Fowl farm located at Jenderam Hulu, Selangor. The birds were examined for ectoparasites, endoparasites and blood parasites. The species of parasites recovered included *Haemaphysalis wellingtoni*, *Lipeurus caponis*, *Menopon gallinae*, *Menacanthus stramineus*, *Goniodes dissimilis*, *Goniocotes hologaster* (ectoparasites); *Strongeloides* sp., *Capillaria* sp., *Heterakis gallinarum*, *Raillietina cesticillus*, *Raillietina tetragona*, *Raillietina echinobothridia*, *Eimeria* sp., (endoparasites); *Plasmodium gallinaceum*, *Leucocytozoon sabrazesi*, *Microfilaria* sp., Trypanosome sp.(blood parasites). The results showed that there were no significant differences between burden of parasite species in apparently healthy and clinically ill Red Jungle Fowls except only for the lice, *Lipeurus caponis*. In conclusion, generally, the apparently healthy and clinically ill Red Jungle Fowls have the same species and burden of parasites harbouring them. Some other organisms, probably bacteria or viruses may be causing the disease in clinically affected birds.

Keywords: *Red Jungle Fowl*, *ectoparasites*, *endoparasites*, *blood parasites*, *apparently healthy*, *clinically ill*.

1.0 INTRODUCTION

1.1 Red Jungle Fowl

The red jungle fowl (*Gallus gallus*) is one of the most important members of the family Phasianidae. It is one of the four species of jungle fowl found in the Indian subcontinent and South East Asia. The other three species are Grey jungle fowl (*Gallus sonneretii*), Ceylonese jungle fowl (*Gallus lafayetti*) and Green jungle fowl (*Gallus varius*). It is regarded as the ancestor of the domestic fowl (*Gallus domesticus*) due to its widespread distribution (Beebe, 1926; Nishida *et al.*, 1985).

The two subspecies of the red jungle fowl are *Gallus gallus gallus* and *Gallus gallus spadiceus*. An important distinguishing feature between the two is the presence of white ear patch in the subspecies *G.g. gallus* while the subspecies *G.g. spadiceus* has a red ear patch (Nishida *et al.*, 1985).

Red Jungle Fowl, when domesticated were observed to be very susceptible to the diseases affecting the domestic chickens. There were several reports on parasites of the Red Jungle Fowl (Amin-Babjee *et al.*, 1985; Lee and Amin-Babjee, 1993). In the case of the Ceylonese Jungle Fowl, *Ascaridia galli*, *Raillietina tetragona* and *Eimeria praecox* are the only parasites recorded (Rysavy *et al.*, 1973), whereas in the Grey Jungle Fowl, *Lemnada sonneretta* is the only parasite recorded (Ali, 1969).

1.2 Parasitism

Parasitic infection can result in an increase in mortality and decrease in hatch rate of birds, thus regulating the population structure (Poulin *et al.*, 2004). In general, parasitism negatively affects the productivity of the local scavenging chickens since they either compete for feed or cause distress to the birds (Jansen and Pandey, 1989; Poulsen *et al.*, 2000)

Avian haemoparasites are known to be pathogenic to their hosts causing high mortalities, reproductive failure, retardation of growth, reduced productivity, and may exert negative effects on behavior and community structure (Dunn *et al.*, 2011). Protozoan parasites include haemosporidia in the genera *Plasmodium* sp., *Haemoproteus* sp., *Leucocytozoon* sp., *Hepatozoon* sp., *Babesia* sp., and haemoflagellates in the genus *Trypanosoma*.

Ectoparasites have a foremost impact on the yield, welfare and husbandry of domestic animals (Colebrook and Wall, 2004). According to Fabiyi (1996), ectoparasites act as biological and mechanical vectors transmitting number of pathogens. It has been known to be a major barrier to chicken health worldwide, causing direct and indirect loss (Permin *et al.*, 2002; Sonaiye and Swan, 2004; Swai *et al.*, 2007).

Endoparasites are those parasites that live within the body of the host and can cause many problems in bird's stomach and intestines, but also affect the normal function of other organs (Hussen *et al.*, 2012). Helminthes of poultry are commonly

divided into three main groups; cestodes, nematodes and trematodes (Jordan and Pattison, 1996). The cestodes of significant importance are of the two genera *Raillietina* sp. and *Hymenolepis* sp. Nematodes constitute the most important group of helminthes of poultry both in number of species and the extent of damage they cause; the main genera include *Ascaridia* sp., *Heterakis* sp. and *Capillaria* sp. (Matur and Dawam, 2010). The prevalence of parasitic helminthes in chickens were reported in several studies, such as India, 90.9% (Yadav *et al.*, 1991), Kenya 93.3% (Mungube *et al.*, 2008), Zambia 95.2% (Phiri *et al.*, 2007) and Nigeria 87.7% (Yoriyo *et al.*, 2008).

As there had been numerous studies conducted to determine the common parasites infesting the domestic chickens such as village chickens and as there were only few studies conducted on the Red Jungle Fowl species especially comparing the parasite flora of the healthy and the sick birds, this study was undertaken to fulfill the following objectives:

- To identify the ectoparasites, endoparasites and blood parasites harboured by the apparently healthy and clinically ill Red Jungle Fowl.
- To compare the burden of the parasites between these two groups.

For this research, the following hypotheses were proposed:

- The populations of parasite species found in the clinically ill Red Jungle Fowls are different compared to the healthy ones.

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