UNIVERSITI PUTRA MALAYSIA

DETECTION OF GASTROINTESTINAL PROTOZOA IN PET CATS PRESENTED TO SELECTED VETERINARY CLINICS IN THE KLANG VALLEY AND RISK FACTORS ASSOCIATED WITH INFECTION

TAN LI PING

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DETECTION OF GASTROINTESTINAL PROTOZOA IN PET CATS PRESENTED TO SELECTED VETERINARY CLINICS IN THE KLANG VALLEY AND RISK FACTORS ASSOCIATED WITH INFECTION

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CERTIFICATION

It is hereby certified that I have read this paper entitled, "Detection of gastrointestinal protozoa in pet cats presented to selected veterinary clinics in the Klang Valley and risk factors associated with infection" by Tan Li Ping, and in my opinion it is satisfactory in terms of scope, quality and presentation as partial fulfilment of the requirement for the course VPD 4999 –Project.

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It is hereby certified that we have read this project paper entitled "Detection of gastrointestinal protozoa in pet cats presented to selected veterinary clinics in the Klang Valley and risk factors associated with infection" by Tan Li Ping 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 - Project.

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ABSTRACT

DETECTION OF GASTROINTESTINAL PROTOZOA IN PET CATS PRESENTED TO SELECTED VETERINARY CLINICS IN THE KLANG VALLEY AND RISK FACTORS ASSOCIATED WITH INFECTION

By

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2016

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The common gastrointestinal protozoa in cats that cause diarrhea are *Giardia spp.*, *Isospora spp.*and *Cryptosporidium spp.*, and recently *Tritrichomonas foetus* has been recognized as an emerging protozoa that causes chronic diarrhea in cats. *Tritrichomonas foetus* infection in cats has not yet been reported in Malaysia.

Entamoeba spp. is found rarely but present in cats. This study aimed to investigate the prevalence of gastrointestinal protozoa in pet cats presented to selected veterinary clinics in Klang Valley as well as the risk factors associated with these protozoal infections. Rectal swabs were performed on 30 diarrheic cats presented to selected veterinary clinics in the Klang Valley to culture *Tritrichomonas foetus*. Another 30 fecal samples were collected randomly and subjected to staining for the detection of other gastrointestinal protozoa. Two out of 30 culture samples were positive for *Tritrichomonas foetus* with a prevalence of 6.7% and both positive samples were from young kittens. *Cryptosporidium spp.* was the only protozoa detected in 3 out of 30 samples through the staining method with a prevalence of 10%. This study detected *Tritrichomonas foetus* for the first time in the Malaysian cat population. The overall prevalence of gastrointestinal protozoa in pet cats in the Klang Valley was low.

Keywords : Gastrointestinal protozoa, *Tritrichomonas foetus*, Cat, Culture, Staining

ABSTRAK

PENGESANAN PROTOZOA GASTRUSUS DALAM KUCING PERLIHARAAN DIBAWA KE KLINK VETERINAR TERPILIH DI KLANG VALLEY DAN FAKTOR-FAKTOR RISIKO BERKAITAN DENGAN INFEKSI.

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Protozoa gastrousus sepunya dalam kucing yang menyebabkan cirit-birit termasuk *Giardiaspp.*, *Isospora spp.* and *Cryptosporidium spp.*, dan kebelakangan ini *Tritrichomonas foetus* telah dikenali sebagai protozoa yang menyebabkan cirit-birit kronik dalam kucing. Infeksi *Tritrichomonas foetus* dalam kucing belum dilaporkan di

Malaysia. *Entamoeba spp.* jarang ditemui tetapi kadang-kadang muncul dalam kucing. Kajian ini bertujuan untuk menyiasat prevalens protozoa gastrousus dalam kucing perliharaan dibawa klinik veterinar terpilih dan juga faktor-faktor risiko berkaitan dengan infeksi protozoa. Pengesatan rektum dilakukan pada 30 kucing cirit-birit yang dibawa ke klinik veterinar terpilih di Klang Valley untuk kultur *Tritrichomonas foetus*. 30 sampel najis dikumpul secara rambang dan diwarnakan dengan teknik pewarnaan untuk mengesan protozoa gastrousus lain. Dua daripada 30 sampel kultur positif untuk *Tritrichomonas foetus* dengan prevalens 6.7% dan dua sampel positif tersebut adalah daripada anak kucing. *Cryptosporidium spp.* adalah satu-satu protozoa yang ditemui dalam 3 daripada 30 sampel dengan pengunaan teknik pewarnaan dengan prevalens 10%. Kajian ini telah mengesan *Tritrichomonas foetus* untuk kali pertama di populasi kucing di Malaysia. Prevalens kesuluruhan untuk protozoa gastrousus di kucing perliharaan di Klang Valley adalah rendah.

Kata kunci : protozoa gastrousus, *Tritrichomonas foetus*, kucing, kultur, pewarnaan

1.0 INTRODUCTION

Protozoans are unicellular organisms that belong to the kingdom Protista which is further divided into several phyla(Hendrix and Robinson, 2006). The four different phyla of veterinary importance includes the flagellated protozoans, amoeboid protozoans, apicomplexans and ciliated protozoans (Hendrix and Robinson, 2006). Protozoa that infect domestic animals may reside in the gastrointestinal tract, circulatory system, urogenital system and also in the respiratory system (Hendrix and Robinson, 2006). Every phyla of unicellular protozoans have their own lifecycle, reproduction stage as well as their feeding behavior. They are transmitted from one host species to another via different means. Generally, protozoans are transmitted via four different routes, including direct contact, exposure to resistant stages in the environment, ingestion and through vectors such as blood feeding arthropods (Bowman et al, 2002).

Some gastrointestinal protozoa are known to cause chronic diarrhea in the feline species. The gastrointestinal protozoa of pathogenic importance in cats include*Giardia spp.*, *Tritrichomonas foetus*and *Cryptosporidium spp.*which cause problems and shed more in younger cats or kittens (Zajac and Conboy,2012 ; Gookin et al,2001 ; Craven, 2010; Rambozzi, 2007). *Tritrichomans foetus* has recently garnered attention as an important aetiological agent of chronic diarrhea in cats in the United States and Eurrope. *Isospora spp.* however usually causes infections without obvious clinical signs, even though occasional mild diarrhea might be observed in very young and

immunosuppressed cat (Craven, 2010).*Toxoplasma gondii* is a common coccidian protozoa in cats that may or may not cause clinical signs (DeFeo et al, 2002).

The host of these protozoa, cats,are primarily kept as companion animals. As more and more people keep these domesticated cats as pets which share the same household as humans, the frequency of contact between themincreases. This leads to an increased risk of zoonotic disease transmission between the feline species and humans.These gastrointestinal protozoa are not just clinically important for cats but also carry a zoonotic risk to humans and subsequently pose a one health problem.

Despite the large population of stray and pet cats in Malaysia,not many studies have been carried out in Malaysia on gastrointestinal protozoa of cats. The most recent study was done by Ngui et al, 2014 in Malaysia on the gastrointestinal protozoa of cats in the stray population. Furthermore, there has beenas of yetno studies on the detection and prevalence of *Tritrichomonas foetus*in cats in Malaysia. A lot of studies haveshown that the prevalence of gastrointestinal protozoa is higher in younger animals, diarrheic cats as well as cats kept in multi-cat households(Barutzki and Schaper,2013 ; Labarthe, et al, 2008 ; Zajac and Conboy, 2012 ; Rambozzi, 2007). The paucity of available and current data on the gastrointestinal protozoa of pet cats in Malaysia and the lack of any studies on Tritrichomonas foetus in cats in Malaysia warranted this study.

The objectives of this study were to:-

1. detect the gastrointestinal protozoa in pet cats presented to selected veterinary clinics in Klang Valley.
2. determine the prevalence of gastrointestinal protozoa in pet cats presented to selected veterinary clinics in Klang Valley.
3. investigate risk factors associated with infection with these protozoa.

Performing Polymerase Chain Reaction (PCR) to detect gastrointestinal protozoa due to its higher sensitivity and the ability to detect up to the species level.

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