

# Toxoplasmosis Examination With Anti-Toxo IgM And IgG Results In Petshop Staff

Sandi Setya Pratama<sup>1</sup>, Adhi Kumoro<sup>2</sup>

<sup>1</sup> Program Studi Sarjana Terapan Teknologi Laboratorium Medis

<sup>2</sup> Sekolah Tinggi Ilmu Kesehatan Nasional

\*Email : sandsatya28@gmail.com

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## ABSTRACT

*Toxoplasmosis is an infection caused by a single-celled parasite called Toxoplasma gondii. Infection is most commonly acquired from contact with cats and their feces or raw or undercooked meat. There are several risk factors that favor the occurrence of this infection including the presence of cats in the residence, cleaning of pet litter boxes, hand washing habits and consumption of raw or undercooked food. Petshop is a retail business that sells a variety of pets and also sells pet food, accessories, animal care and maintenance. The purpose of this study was to determine the exposure to toxoplasmosis with the results of Toxoplasma gondii IgG antibody examination and Toxoplasma gondii IgM antibody in petshop staff. This study is a descriptive study using cross sectional method with 25 respondents from petshop staff. The test method for toxoplasmosis detection used was Rapid (Immunochromatography). The data analysis technique used was univariate analysis to determine the percentage of seropositive results of Toxoplasma gondii IgG antibodies and Toxoplasma gondii IgM antibodies. Based on the results of the study obtained data 11 respondents seropositive anti-toxo IgG, 14 respondents did not have anti-toxo IgG and anti-toxo IgM and there were no respondents with positive anti-toxo IgM in Petshop officers. Therefore it can be concluded that 11 out of 25 respondents have been infected with Toxoplasma gondii.*

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## INTRODUCTION

Toxoplasmosis is an infection caused by a single-celled parasite called *Toxoplasma gondii*. Infection is most commonly acquired from contact with cats and their feces or raw or undercooked meat (Hedra, 2013). *Toxoplasma gondii* is a species of the genus *Coccidia* that lives in the small intestinal cells of cats (Gandahusada, 2008). Toxoplasmosis is a serious infectious disease and can be life-threatening in patients with immunodeficiency states (Hokelek, 2017). Animals that are often around humans such as cows, horses, sheep, pigs, chickens, dogs, hamsters, cats, birds, rats and wildlife such as ferrets, tigers, coyotes and so on can be infected with *Toxoplasma gondii* so that they can automatically transmit it. All people can be infected with *Toxoplasma gondii*, men and women, both young and old (Prasetyaningsih, 2015).

*Toxoplasma gondii* can be found almost worldwide and has infected more than 50% of humans in various populations in the world. Cumulative serologically detected cases of toxoplasmosis in Indonesia are above 40%, which is a very high incidence rate (Pudjiatmoko, 2014).

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Petshop is a retail business that sells a variety of pets and also sells pet food, accessories, animal care and maintenance. People in this community mostly have direct contact with animals, especially cats and dogs. Activities that are routinely carried out by staff at Petshop are feeding, cleaning animal litter, bathing, and interacting with animals. This activity pattern is suspected to be at risk of toxoplasmosis. Therefore, the researcher conducted a study with the target respondents (workers) from Petshop regarding toxoplasmosis examination with the results of anti-toxo IgG and anti-toxo IgM examination.

## METHODS

This research is an analytic descriptive study using a cross sectional design on petshop officers. The research was conducted from December 2022 to February 2023 at Prodia Health Care Bintaro laboratory. The population used in this study is people whose work is related to Petshop, namely all Petshop officers in Pondok Benda village as many as 25 people. This study uses primary data with total sampling technique. The tools and materials used were closed system needle, holder, alcohol swab, tube with EDTA anticoagulant (purple cap), serum cup, dry cotton, wound plaster, ice gel packed and cooler box, Dalf brand Toxo IgG/IgM Drop Test Strip.

Toxoplasma gondii antibody examination using immunochromatography method. The data collected in this study were processed using univariate analysis to determine the percentage of anti-toxo IgG and anti-toxo IgM serology results.

## RESULTS AND DISCUSSION

The research sample or respondents in this study were Pondok Benda Village Petshop officers whose work was related to Petshop, totaling 25 samples.

**Table 1.** Characteristics of respondents based on gender and age

Variable	N ( $\Sigma$ 25)	Percentage (%)
Gender		
Male	14	56%
Female	11	44%
Age		
Mean : 29,5		
Minimal – maksimal : 20-36		
20 - 28	10	40%
29 - 36	15	60%

Based on Table 1.1, it is known that most of the respondents are male, as many as 14 people (56%), while only 11 female respondents (44%). The age of respondents is between 20-36 years, aged 20-28 years as many as 10 people (40%), and aged 29-36 years as many as 15 people (60%).

**Table 2.** Characteristics of respondents based on risk factors for toxoplasmosis

No	Description	Respondent's answer (%)	
		Yes	No
1	Keeping cats in living quarters	76%	24%
2	Cleaning animal litter boxes	84%	16%
3	Activities that bring the skin into contact with the ground	28%	72%
4	Always wash your hands after cleaning the dirt, contact with animals, contact with soil	100%	0%
5	Eating food served raw or undercooked in the past two months	88%	12%

Based on table 1.2, it is known that all respondents who keep cats are 76%. Respondents who clean the litter box 84%. Respondents who have contact with soil such as gardening and farming 28%. All respondents always wash their hands after cleaning the litter box, contact with animals and contact with soil 100%. Based on the history of raw or undercooked food consumption, most respondents 88% admitted to consuming raw or undercooked food in the form of meat and vegetables in the last two months.

**Table 3.** Characteristics based on rapid anti-Toxo test results

Characteristics	Frequency	%
IgG and IgM negative	14	56
IgG Positive	11	44
IgM Positive	0	0
Total	25	100.0

From the data above, it can be concluded that there were no respondents who were detected IgM positive, but there were 11 out of 25 respondents (44%) who were detected IgG positive.

## DISCUSSION

Toxoplasmosis is an infectious disease caused by the protozoan *Toxoplasma gondii*. *Toxoplasma* can infect other living things such as humans, mammals, and poultry. In humans, this infection can enter in several ways, including exposure to cat feces containing *Toxoplasma gondii* parasites, consuming food or drinks contaminated with *Toxoplasma gondii* parasites, including undercooked meat containing *Toxoplasma gondii* parasites. In this study, toxoplasmosis detection was carried out by detecting the presence of *Toxoplasma gondii* IgG antibody and *Toxoplasma gondii* IgM antibody in blood samples of petshop respondents using immunochromatographic examination method.

There were 11 (44%) respondents who had IgG *Toxoplasma gondii* antibodies and no respondents with positive IgM antibodies. The presence of IgM antibodies in the blood indicates a new infection or an acute infection. The presence

of IgG antibodies in the body indicates that infection has occurred or is also called infection in the dormant (latent) phase (Soedarto, 2012).

The results of the study in table 2 are in line with the results of Meng's research (2015) which says that the factor that can affect the occurrence of toxoplasmosis is the presence of cats in the environment dominated by the group keeping cats by 76% and not keeping pet cats by 24%. Keeping a cat in the residence is thought to be at higher risk of toxoplasmosis than keeping a cat not in the residence or not keeping a cat at all. This is due to the higher intensity of interaction if the cat is inside the residence and because cats are the definitive host of *Toxoplasma gondii*.

One behavior that is also suspected of the risk of toxoplasmosis is cleaning the litter box or animal litter. In this study there were 11 (44%) of 21 respondents who had the habit of cleaning pet litter boxes detected IgG seropositive. The behavior of cleaning the litter box has the potential to play a role in the transmission of toxoplasmosis from animals to humans if when cleaning does not use gloves or does not wash hands after cleaning feces.

Handwashing is an important basis for every individual. It is possible that transmission of toxoplasmosis in humans occurs due to negligence in washing hands after handling objects in open spaces, contact with soil, cleaning feces and before eating. The results of Meng's research (2015) show that factors that can affect the occurrence of toxoplasmosis besides the presence of cats in the environment are poor hand washing habits. In this study 25 (100%) respondents had the habit of washing their hands every time after contact with animals, contact with the ground, cleaning the dirt and before eating. A total of 14 (56%) of the 25 respondents did not have IgG or IgM antibodies to *Toxoplasma gondii*. Nevertheless, hygiene must be maintained, especially for individuals who often eat without using a spoon considering that the main way *Toxoplasma gondii* enters the host's body is through oral fecal matter. It is possible for oocysts attached to the hands to be swallowed when eating.

Transmission can also occur through poor diet, e.g. eating raw food, drinking untreated water, neglecting to wash fruits and vegetables or food that is contaminated with cat feces containing oocysts. The percentage of respondents who consumed raw or undercooked food in the last two months was 88%. This is more than the 12% of respondents who did not consume raw or undercooked food in the last two months. Of course, this could also be a factor that increases the risk of infection, considering that none of them gave positive IgM results.

## CONCLUSIONS

In this study, 11 respondents were seropositive for anti-toxo IgG, 14 respondents did not have anti-toxo IgG and anti-toxo IgM and there were no respondents with positive anti-toxo IgM in Petshop officers. Therefore it can be concluded that 11 out of 25 respondents have been infected with *Toxoplasma gondii*.

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