

A SURVEY OF *TOXOPLASMA GONDII* ANTIBODIES IN GOATS AND CATTLE IN LAMPUNG PROVINCE, INDONESIA

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Abstract. A survey for antibodies to *Toxoplasma gondii* using latex agglutination test (LAT) was carried out from November 1994 to March 1995 in several areas of Lampung Province, Sumatra Indonesia with seropositivity rates of 47.5% in 160 goats and 9.0% in 200 cattle. Twenty-six out of 78 positive goats had a maximum antibody titer of more than 1 : 2,048. In case of cattle, the maximum antibody titer was 1 : 128.

INTRODUCTION

Toxoplasmosis is a widespread zoonosis which causes abortion and congenital hydrocephalus in man. The causative agent *Toxoplasma gondii* has a wide host range which includes mammals, birds and cold-blooded animals. The interaction between various intermediate hosts and the feline definitive host is very complex. These factors makes it very difficult to break the life cycle of *T. gondii*. Serious infection occurs in man through ingestion of oocysts from feline feces and/or cysts in inadequately cooked meat. Severe economic losses occur due to early embryonic death, abortion and birth of weak kids (Dubey *et al*, 1986). In this paper results of survey for antibodies to *T. gondii* in goats and cattle in Lampung, Indonesia are reported.

MATERIALS AND METHODS

Blood samples were obtained from 160 goats and 200 cattle in Lampung Province, Sumatra island, Indonesia. Blood samples from goats were collected using filter paper strip (Toxocheck-MT, Eiken, Japan). Cattle blood samples were collected using venject tube (Terumo, Japan). The eluate from filter paper of goat sample and sera from cattle were examined by latex agglutination test (LAT, Toxocheck-MT, Eiken, Japan). Blood samples were diluted two-fold to 1 : 2,048 on a 96 well microtiter plate. Antibody titers of more than 1 : 64 were

determined positive for *T. gondii* infection (Tsubota *et al*, 1977).

RESULTS

The prevalence of LAT antibodies to *T. gondii* in goats and cattle are shown in Table 1. The prevalence rate of *T. gondii* antibodies in goats (47.5%) was higher than in cattle (9.0%). Antibody titer of more than 1 : 2,048 was found in 26 goats, however, the maximum titer in cattle was 1 : 128.

DISCUSSION

The result of this survey suggests that goats play a more important role as source of infection than cattle. Seroprevalence of *T. gondii* in other areas of Indonesia were reported as follows: 23.5% from 95 goats and 3.3% of cattle in North Sumatra (Heryanto *et al*, 1984), 61% from 18 goats and 0% cattle in Kalimantan (Durfee *et al*, 1976), and 20.6% of goats in Tuban and 20.0% goats in Kediri, Surabaya (Sasmita, 1993). Gandahusada (1991) reported that the nation-wide seroprevalence in Indonesia was 11-61% in goats and less than 10% in cattle. Goat meat is favorite among Indonesians and "sate" stands are found in every street corner. "Sate" is a traditional Indonesian dish with grilled skewer meat of goat or chicken. There is no threat of infection if meat is cooked adequately, but often the cooking in these stands is not adequate and the preparation and handling of the food is done without proper hygienic measures. In addition, the dish often contains fresh vegetables, perhaps contaminated with raw meat through use of the same cooking utensils.

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Table 1

Seroprevalence of latex agglutination test to *Toxoplasma gondii* in goats and cattle in Lampung Province, Indonesia.

Species	No. of sample	No. of positive	No. of (%)	Antibody titer					
				64	128	256	512	1,024	2,048
Goat	160	78	47.5	4	10	8	12	18	26
Cattle	200	18	9	10	8	0	0	0	0

Survey for antibodies to *T. gondii* in humans carried out in Bandar Lampung City, Lampung Province showed a 50% seropositive rate (Matsuo, 1995). This high prevalence rate is thought to be due to the high percentage of infected goat meat. Recently, the problem with toxoplasmosis in humans is not only due to abortion and congenital abnormality, but also toxoplasma encephalitis which has become a common opportunistic infection among AIDS or immuno-compromised patients. In USA, 30% of *T. gondii* seropositive AIDS patients has been reported to develop toxoplasma encephalitis (Roberts, 1994). This trend could occur in any other nation, and Indonesia is no exception.

The seropositivity for *T. gondii* were reported from wild life, such as lynx, elephant and gibbon (Murata, 1989; Riemann *et al*, 1974). Indonesia have abundant wild life species and the number of domestic animal is increasing. Thus it is not a simple task to control toxoplasmosis in this ecological environment, however I believe that it is possible to improve the situation, starting with careful investigation of the disease.

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