SEROPREVALENCE OF *T. GONDII* INFECTIONS OF WATER BUFFALOES IN NORTHEAST, THAILAND

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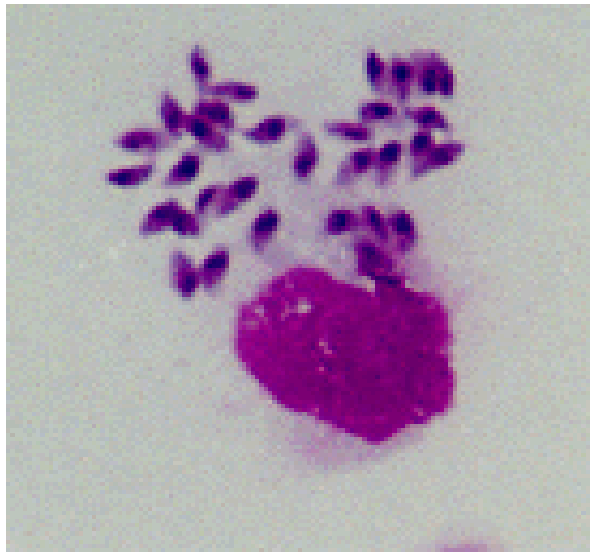
Medical & Veterinary Importance

- Toxoplasmosis is a widespread zoonoses caused by *Toxoplasma gondii*
- It infects humans and many warm-blooded animals, inducing abortions and neonatal mortality in cattle
- Asymptomatic animals could harbor pathogens and may act as carriers to other animals including humans
- The infections in cattle does not usually cause clinical symptoms as they have a high natural resistance to the parasite



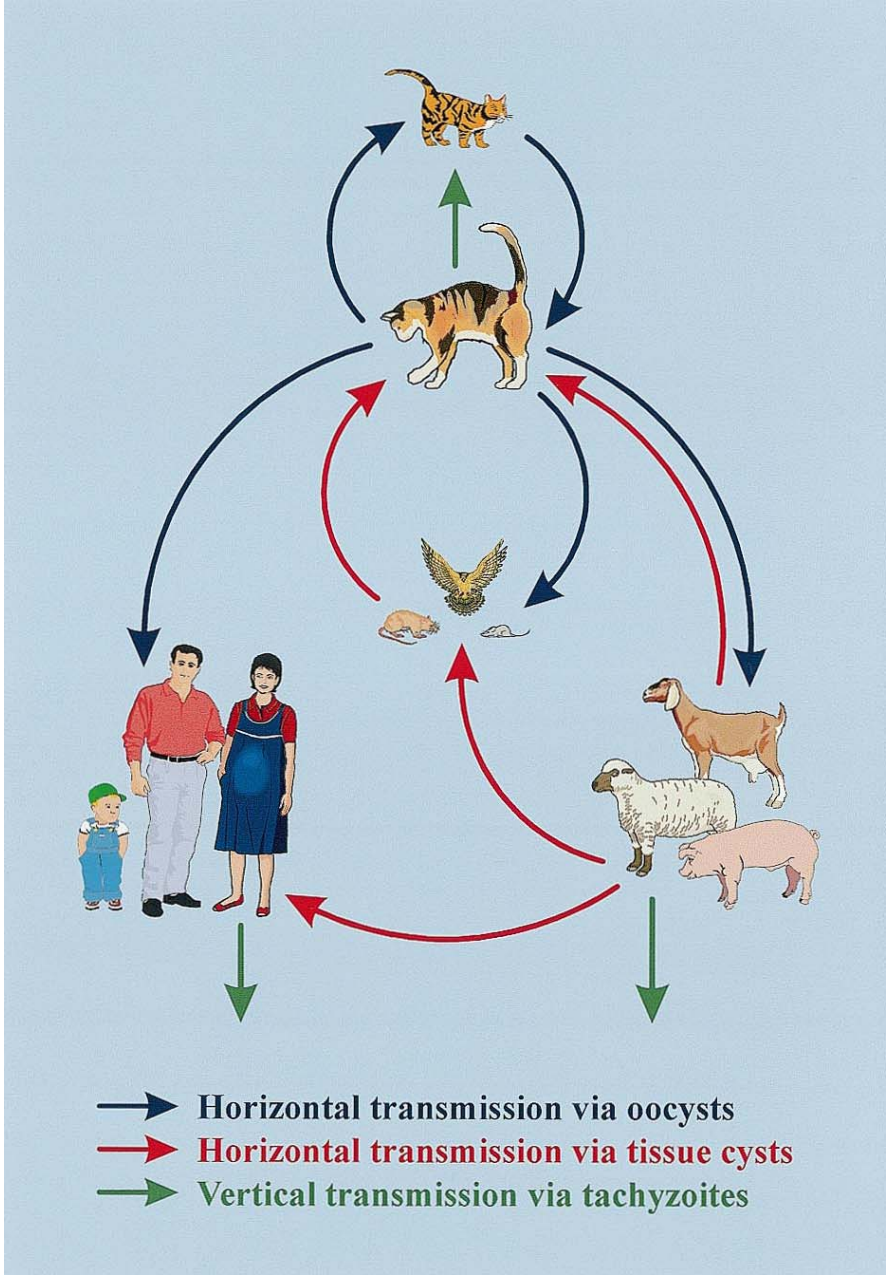
Medical & Veterinary Importance

- Bovine abortion due to *T. gondii* infections could result in a reduction of milk production (in dairy cows) and culling of animals, and thus substantial economic loss

Toxoplasmosis

- Infection by ***Toxoplasma gondii*** is widespread in humans and many other species of warm blooded animals

- It is transmitted via three primary ways, congenitally, by ingestion of food and water contaminated with sporulated oocysts from infected cat feces, and by the ingestion of undercooked meat containing tissue cysts



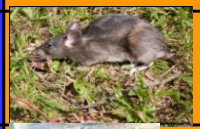
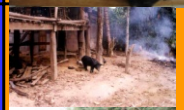
Toxoplasma gondii: from animals to humans
Astrid M. Tentera,*, Anja R. Heckerotha, Louis M. Weissb

International Journal for Parasitology 30 (2000) 1217±1258

Prevalence of Human Toxoplasmosis Worldwide

Country	Prevalence	References
Australia	30- 40 %	Johnson et al., 1980
Africa	71.4%	Lopez et al., 1992
Brazil	73.3%	Cavalcante et al., 2006
France	75%	Tenter et al., 2000
Indonesia	70%	Terazawa et al., 2003
Korea	6.9%	Lee et al., 2000
Malaysia	20-30%	Nissapatorn et al., 2004
Taiwan	23%	Fan et al., 2002
Thailand*	12.4%*	Sukthana et al., 2000
USA	22.5%	Jones et al., 2001
Vietnam	20%	Sery et al., 1998

Prevalence of Animal Toxoplasmosis in Thailand

Animal	Prevalence (%)	References
Rodents	 4.6	Jittapalapong et al., 2010
Cats	 7.3-11.0	Jittapalapong et al., 2007; Sukthana, 2006
Dogs	 9.4	Jittapalapong et al., 2007
Pig	 15.5	Tuntasuvan et al., 1989
Goats	 27.9	Jittapalapong et al., 2005
Dairy cows	 22.3	Jittapalapong et al., 2007
Elephant	 25.6	Tuntasuvan et al., 2001
Wild animals (Tiger)	 15.4	Thiangtum et al., 2006

Objectives

- The objective of this study is to investigate the prevalence of *T. gondii* infections in water buffaloes in Northeast Thailand

Materials & Methods

Animals

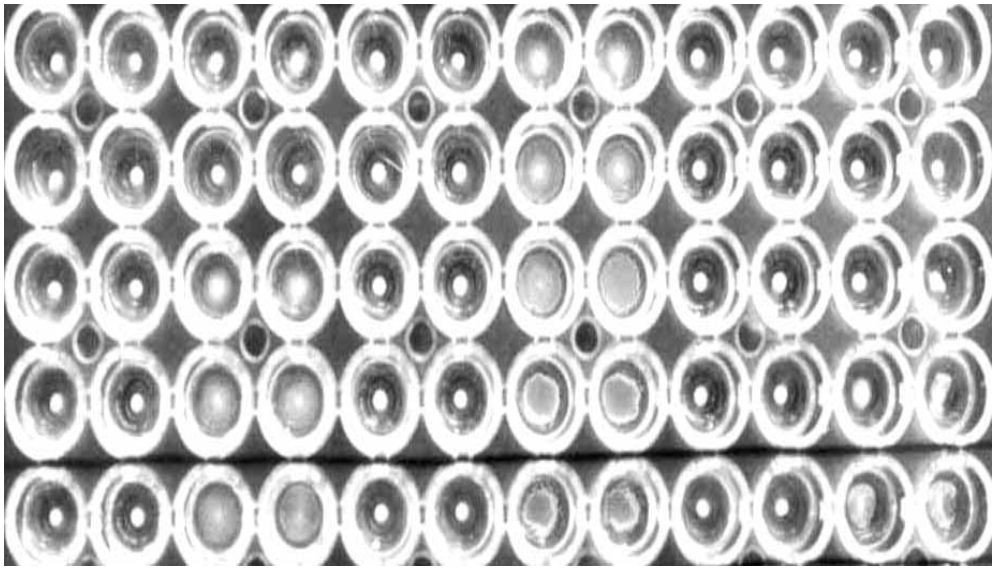
- Sera from 626 buffaloes of 287 farms from 6 provinces in the Northeast of Thailand were collected, tested using latex agglutination test (LAT, Eiken, Japan), and confirmed the positives by indirect fluorescence antibody test (IFAT)

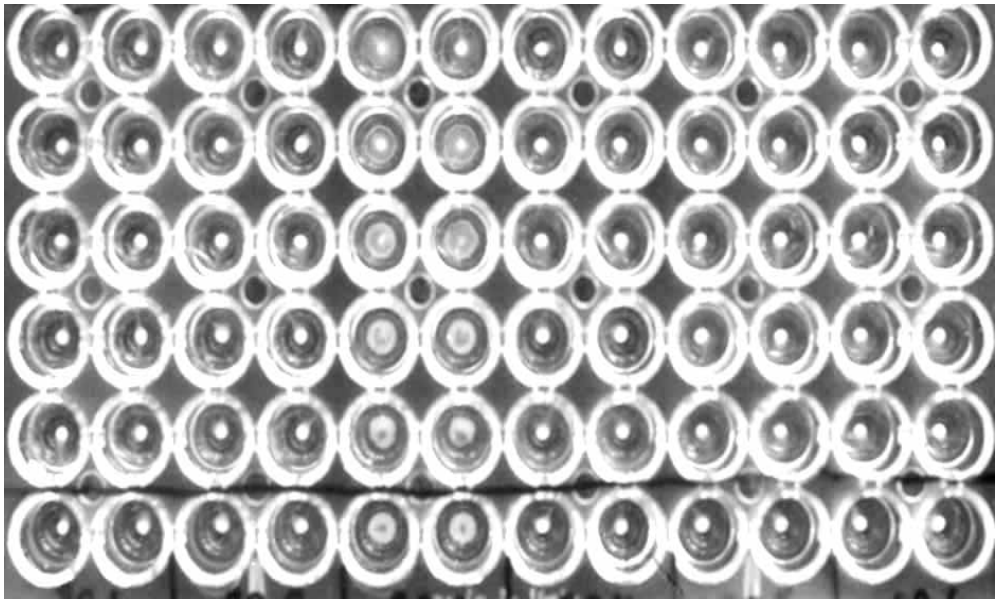
Serological Assay

Detection of antibodies to *T. gondii* infections

- **Analyzed by the latex agglutination test (LAT) kit (TOXOCHECK-MT 'Eiken', Japan)**

- **The cut-off titer for this test was 1: 64 according instructions in the kit (Tsubota et al., 1977)**





Results

- The overall infection of *T. gondii* was 35 (5.59 %)
- The highest titer was 1: 1,024
- Roi Et was the highest endemic area for *T. gondii* infections of buffaloes (11.11 %) in Thailand

Areas	Total	%	positive number		titre				
			number	%	:64	:128	:256	:512	:1024
Sa Kol Nakhon	205	32.75	10	4.88	6	3	1	0	0
Ubol Ratcha Thani	138	22.04	9	6.52	7	1	1	0	0
Roi Et	81	12.94	9	11.11	7	1	0	0	1
Surin	73	11.66	4	5.48	2	2	1	0	0
Buriram	70	11.18	1	1.43	0	1	0	0	0
Sri Sakate	59	9.42	2	3.39	1	1	0	0	0
total	626	100	35	5.59	23	9	3	0	1

Roi et had the highest infected farms (15.52%) and buffaloes (11.11%)

Herd infection was 11.5% among buffalo population in the Northeast of Thailand

province	Farms			Buffaloes		
	Number	positive	% infected	Number	positive	% infected
Ubol Ratchathani	59	8	13.56 (8/59)	138	9	6.52 (9/138)
Roi Et	58	9	15.52 (9/58)	81	9	11.11 (9/81)
Sri sakate	22	2	9.09 (2/22)	59	2	3.39 (2/59)
Surin	28	4	14.28 (4/28)	73	4	5.48 (4/73)
Burirum	22	1	4.54 (1/22)	70	1	1.43 (1/70)
Sakol nakhon	98	9	9.18 (9/98)	205	10	4.88 (10/205)
Total	287	33	11.5(33/287)	626	35	5.59 (35/626)

Buffaloes >5 years had the highest seroprevalence (5.91%) compared to 1- 5 years (3.67%) and < 1 year (2.6 %)

Age group	total	%	positive number	
			number	%
0-1 year	38	6.07	1	2.6 (1/626)
		(38/626)		
>1 - 5 year	402	64.22	56	5.72 (56/626)
		(402/626)		
> 5 year	186	29.71	11	5.91 (11/626)
		(186/626)		
total	626		35	5.59
				(35/626)

	Thailand	Brazil	Egypt	Iran	Vietnam
Prevalence	**5.59**	**3.85**	**24-67**	**8.8**	**1.5**
Method	LAT, IFAT	LAT	Dye test	IFAT	LAT
Animal No.	626	104	75	385	200
Ref	Jttapalapong et al., 2010	Pita Gondim et al., 199	Dubey & Beattie, 1988	Navidpour & Hoghooghi-rad, 1998	Huong et al., 1998

Acknowledgment

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