

PREVALENCE OF INTERNAL PARASITE IN THAI NATIVE FEMALE GOATS

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ABSTRACT

A survey of the prevalence of gastrointestinal parasites of Thai native female goats was conducted in 2 provinces in southern Thailand. The most common parasites were coccidia (*Eimeria* spp) and stomach round worms (*Haemonchus contortus* and *Trichostrongylus* spp). Young goats (milk teeth) had significantly ($P < 0.05$) higher concentrations of coccidian oocysts in faeces than did older goats (permanent teeth). Goats from fishing villages had significantly ($P < 0.05$) higher coccidian oocysts than did goats in rice growing/rubber plantation systems. This study indicated that all goats were infected with at least one type of parasite. Eggs per gram (EPG) in faecal samples showed that these parasites might affect growth rate of goats in the village.

INTRODUCTION

The number and distribution of goats in the 14 provinces in southern Thailand have been reported by Saithanoo *et al* (1985). The total goat population in the South is distributed mainly in the five border provinces (76.9%), a west coastal zone (17.9%) and the east coastal (5.2%). Saithanoo and Milton (1989) have reported that the productivity of native goats in Thai villages is generally poor when compared with the growth achieved when raised under improved management conditions. One of the likely restraints to the production is the effects of internal parasites on the growth of young kids and on the performance of adult goats. There is, however, definitive information available on the severity of internal parasitism in goats in southern Thailand.

The present experiment was designed to investigate the prevalence of internal parasites in Thai native female goats from villages in two farming systems in southern Thailand. These goats were being collected from representative areas of southern Thailand to constitute a breeding herd for more intensive studies of native goat biology. The effects of age and year of collection were also examined in this study.

MATERIALS AND METHODS

Collection of Faecal Samples

A total of 106 faecal samples were obtained from female goats newly introduced from villages to quarantine on the Prince of Songkla University (PSU) farm during 1984 and 1985. These goats were purchased from two types of village, fishing and rice growing/rubber plantation from Songkla and Pattani provinces. In each year, they were purchased in June, July or August, this time being the wet season for this area of Thailand. All goats were individually held in quarantine about 2-3 days before faecal collection. Faecal samples were taken directly collected from the rectum and stored in plastic bags until examination. At the time of faecal collection, the dentition of each goat was examined as an estimate of age.

Faecal Examination

A modified McMaster technique (J.A. Whitelock & Co., Bexlley N.S.W., Australia) was used for quantitative analysis of coccidian oocysts and helminth eggs. Faecal samples (2 g) were thoroughly mixed in 60 ml of saturated sugar solution. This suspension was sieved through tea strainer, and during steady stirring, a suspension (0.3) was removed and placed into two McMaster counting chambers. Number of oocysts or helminth eggs counts within the etched area of these two McMaster counting chambers was multiplied by 25 to yield oocysts or eggs/g faeces. The eggs of the different parasite species was classified by reference to illustrations in Sloss (1970).

Experimental Design

The experiment was a 2x2x2 factorial in completely randomized design. Factors were age (young (milk teeth) and mature (permanent teeth)), village type (fishing and rice growing/rubber plantation) and year (1984 and 1985), respectively.

Statistical Analysis

The number of eggs/oocysts (n) was transformed ($\log_{10}(n + 1)$) and analysis of variance was used to detected the significant differences of the treatments on egg/oocyst count (least squares means). The General Linear Model procedure in the Statistical Analysis Systems (SAS 1987) was used.

RESULTS

The results showed the following common parasite eggs in all faecal samples: coccidia (Eimeria spp), stomach round worms ((Haemonchus contortus) and Trichostrongylus spp), threadworm (Strongyloides papillosus), whipworm (Trichuris ovis) and tapeworm (Moniezia expanza). Subsequent studies have determined that the goats with milk teeth are less than 9 months of age (young) with permanent teeth appearing at a later age (mature).

Coccidian

Coccidia were the most common parasite eggs found in faeces (96%). A significantly ($P < 0.05$) higher proportion of young goats had coccidian oocysts in faeces than did older goats (Table 1). However, where infected, the average OPG and intensity of infection was similar to both young and mature goats. Goats from fishing villages had significantly ($P < 0.05$) higher EPG than did goats from rice growing/rubber plantation villages.

Table 1 Prevalence of Coccidian (*Eimeria* spp) oocysts in the faeces of female Thai native goats from different village systems in southern Thailand

Parameter	Number Examined	% Infected	Average OPG	Range - % of goats with (OPG):			
				0-499	500-999	1000-4999	>5000
Tooth							
Young	62	95*	2371	23	16	47	14
Mature	64	68	2214	32	14	43	11
Village type							
Fishing	60	98	2539*	18	17	50	15
Rice/Rubber	46	93	2125	37	13	39	11
Year							
1984	42	93	2211	26	14	52	8
1985	64	98	2459	27	16	40	17

*Significantly different from comparable mean ($P < 0.05$)

Stomach Round Worms

Ninety-five percent of all faecal samples contained the eggs of stomach round worms. It was not possible to distinguish by microscopy differences between the eggs from the two genera in this group (*Haemonchus* spp and *Trichostrongylus* spp). The average concentrations of eggs in faeces (EPG) and the range of EPG found are shown in Table 2. There were no significant differences found between the groups tested.

Threadworm Infection

Threadworms (*Strongyloides* spp) were found in 62% of all faecal samples and the concentrations and distributions are presented in Table 3. On average, most goats (88%) had less than 500 EPG in faeces. There was no significant differences in EPG or their distributions between treatments.

Table 2 Prevalence of stomach round worms (Haemonchus spp and Trichostrongylus spp) eggs in the faeces of female Thai native goats from different village systems in southern Thailand

Parameter	Number Examined	% Infected	Average EPG	Range - % of goats with (EPG):			
				0-499	500-999	1000-4999	>5000
Tooth							
Young	62	95	1523	32	26	36	6
Mature	64	95	1004	55	18	25	2
Village type							
Fishing	60	100	1415	37	23	35	5
Rice/Rubber	46	89	1149	48	22	26	4
Year							
1984	42	88	1491	48	21	24	7
1985	64	100	1201	38	23	36	3

Table 3 Prevalence of threadworm (Strongyloides spp) eggs in the faeces of female Thai native goats from different village systems in southern Thailand

Parameter	Number Examined	% Infected	Average EPG	Range - % of goats with (EPG):		
				0-499	500-999	1000-4999
Tooth						
Young	62	61	369	85	10	5
Mature	64	64	221	91	7	2
Village type						
Fishing	60	60	188	97	2	1
Rice/Rubber	46	65	449	76	17	7
Year						
1984	42	64	491	76	17	7
1985	64	61	179	95	3	1

Whipworm and Tapeworm

Table 4 shows the incidence of whipworm (Trichuris spp) and tapeworm (Moniezia spp) eggs in faeces of goats sampled. There were no significant differences between treatments and the EPG from these parasites were low when compared with other species.

Table 4 Prevalence of whipworm (Trichuris spp) and tapeworm (Moniezia spp) eggs in the faeces of female Thai native goats from different village systems in southern Thailand

Parameter	Number Examined	<u>Trichuris</u> spp			<u>Moniezia</u> spp		
		% Infected	Average EPG	Range	% Infected	Average EPG	Range
Tooth							
Young	62	23	65	25-75	3	75	50-75
Mature	64	11	66	25-200	2	50	50
Village type							
Fishing	60	17	93	25-200	0	0	0
Rice/Rubber	46	20	36	25-75	7	67	50-100
Year							
1984	42	17	61	25-200	7	67	50-100
1985	64	19	69	25-175	0	0	0

DISCUSSION

The results of this survey revealed that the most common parasites in Thai goats were coccidia (Eimeria spp) and stomach round worms (Haemonchus spp and/or Trichostrongylus spp). Suttiyotin (1987) has also reported the occurrence of these parasites in goats from the same area. Threadworm (Strongyloides spp) infection were found in 60% of the goat sampled, but only level of infestation were observed in these animals. Whipworm (Trichuris spp) and tapeworm (Moniezia spp) were found in only 18 and 3% of the goats, respectively, and since these parasites are usually non-pathogenic in mature goats, these levels are not likely to be a serious threat to animal health.

Coccidiosis is serious disease of young animals, usually having it greatest effect on kids prior to and just after weaning. The concentration of oocysts in faeces associated with detrimental effects in young goats is difficult to define, since not all Eimeria spp produce pathological changes in the host. In the present study, a higher proportion (95%) of young goats was infected with Eimeria spp than older goats (68%), but the levels of infestation were similar in both groups. This may suggest that there is some form of immunity to coccidiosis gained as the animals get older or get a more prolonged exposure to infection (Baker 1975). It is not possible to know from the present study whether these levels (average 2,371 OPG, range 25-10,000) in young goats were depressing growth, nor it is possible to predict the severity of infestation from the OPG in faeces. However, the levels of infection found indicate that Eimeria may be a major parasite of young goats in the villages, and some studies ought to be conducted on the strategic use of coccidiostats for these kids in the village environment. There is good evidence that the control of coccidiosis is essential for the health of goats raised under intensive management systems in this environment (Milton et al 1987).

Daud-Ahmad et al (1991) investigated the intestinal parasite burdens in Kambing Katjang grazing grass pasture in Malaysia. The major cause of death was diagnosed as haemonchosis. Round worm (Haemonchus spp and/or Trichostrongylus spp) in the faeces of surviving goats varied from 800 to 2,000 EPG. Similar mean levels (1,000-1,500 EPG) were found in the present experiment for undrenched Thai native goats, although the range of values was large (25-13,000 EPG). It is again not possible to predict "safe" values from this data because the pathogenicity of the two parasites described in this group varies markedly. Baldock and Leutton (1984) have suggested that worm populations producing levels of <1,000 EPG (Haemonchus spp) or <8,000 EPG (Trichostrongylus spp) can be harboured by animals without significant effect on animal production. High EPG (500-2,000) may therefore predict severe infestation if these eggs are from haemonchus spp but benign infestation if Trichostrongylus spp. Baxendell (1987) has stated that severe Haemonchosis in goats is characterised by EPG >2,000 and in hot wet conditions the occurrence a swelling under the jaw (bottle jaw). It is clear that a further definition of the round worm population is needed if the potential effects of EPG are to be given meaning. Mugeni (1991) has found no significant effect of a suppressive drenching strategy (<500 EPG) on the growth of Australian cashmere goats grazing tropical pastures. Undrenched goats grazing the same type of pasture in this study were excreting 1,500-2,500 EPG (mostly Haemonchus spp) in faeces, and grew as well as drenched goats. In the study with village goats, approximately 65% of all goats infected has less than 1,000 EPG, and none were suffering bottle jaw, suggesting that goats surviving to this age probably have a high tolerance/resistance to intestinal parasite infections. There is, however, a need to study the incidence of parasite burdens in young goats in village systems to determine whether strategic treatment is needed until resistance/tolerance is acquired.

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