Prevalence of gastro-intestinal parasites of cattle in Udon Thani, Thailand

Chonlawit Yuwajita[1*], Suttipong Pruangka[2], Tipabhon Sukwong[3]

ABSTRACT: Gastro-intestinal (GI) parasitic infections remain one of the major constraints to ruminant production in Thailand. Insidious productivity losses through reduced feed intake and decreased efficiency in feed utilization, associated with subclinical or chronic conditions of parasitic infections are often the cause of large economic loosed. The objectives of this study were to; 1) assess the prevalence of GI parasitism in cattle in Udon Thani province, Thailand; 2) determine the species of existing GI parasites. A total of 502 cattle fecal samples were collected and examined using simple floatation and simple sedimentation methods. There were 65.94% cattle infected with various GI parasites including Liver fluke (*Fasciola* spp.)14.14%, Rumen fluke 31.27%, *Strongylodie* spp. 10.76%, *Capillaria* spp. 4.18 % and *Thrichuris* spp. 4.38%, respectively. The high incidence of parasitism of cattle might have been due to the relative low influence of feeding behavior and deworming program. In circumstances of very high infection, management and treatment are highly recommended.

Keywords: Gastro-intestinal (GI) Parasites, cattle

Introduction

Gastro-intestinal tract (GIT) parasites are known to be widespread in Comeroon (Ndamuk, 1985) and limit livestock production in many areas and countries of the world (Vlassoff, 2001 and Na'ang'a et al., 2004). Studies have shown that helminthic parasites are by far the most serious causes of production losses in famed ruminants and the nematodes are indisputably the cause of serious production losses to ruminants in sub-Saharan Africa, and indeed (Odoi et al., 2007 and Kanyari et al., 2009). In Thailand, gastro-intestinal parasite infection has been being a significant problem, particularly liver fluke caused by *Fasciola gigantica*. The parasites directly cause reducing growth, health and productivity of traditional domestic animals of Thai farmers (Chompoochan et al., 1998). Round worms classified in Trichostrongylidae, i.e. *Mecistocirrus spp*., *Cooperia spp*., *Trichostrongylus spp*., *Bunostomum spp*., and *Oesophagostomum spp*. are frequently found in gastro-intestinal system of cattle. There are a number of research study reveals that round worms such as *Toxocara vitulorum* and *Strongyloides papillosus* infection cause reducing emaciation, milk production, immunity (Chittapanlapong et al., 1987). *Toxocara spp.* infection in calf (1-3 months) causes anorexia, bloody diarrhea, and mortality (Muang, 1989). Lesion is also found by the obstruction of adult round worms in the intestine, particularly in

[1] Program in Veterinary Technology, Faculty of Technology, Udon Thani Rajabhat University, Udon Thani 41000, Thailand

[2] Faculty of Technology, Udon Thani Rajabhat University, Udon Thani 41000, Thailand

[3] Faculty of Technology, Udon Thani Rajabhat University, Udon Thani 41000, Thailand

* Corresponding author: Dr_chonlawit@hotmail.com

calf. Additionally, parasites classified in genus *Haemonchus, Mecistocirrus, Cooperia, Trichostrongylus*, and *Moniezia benedeni* are found in calf as well (Sook, 1978). According this, 10 percent of weaning calf is died because of *Mecistocirrus*, *Cooperia*, *Trichostrongylus*, *Moniezia benedeni* infection (Usanakornkul, 1987). This research study aimed at performing field survey to determine parasitic species and acquire data of parasitic prevalent in gastro-intestinal tract of cattle so that knowledge acquired could be useful for prevention plan and improve the proficiency of cattle production of the country.

Materials and methods

Fecal samples were collected from composite sex (502 cattle) of adult cows and buffaloes at the age of at least 1 year old by means of rectal examination during May 2013. The study area is shown in Figure 1. All samples were stored in the temperature of 4 °C. Simple floatation and simple sedimentation techniques were performed to determine parasite eggs in fecal samples. Type and number of parasite eggs were calculated as baseline data (Soulsby, 1982).

Figure 1 Study areas in Udon Thani provine, Thailand

The data were entered into MS Excel 2007 and analysis was conducted using the statistical package for social sciences (SPSS). Prevalence was calculated as a percentage of d/n where d is the number of animals infected and n is total number of animals examined. The association between independent factors and the prevalence of the various parasites were evaluated using the Chi-square test (χ^2). In the analysis confidence level was held at 95% and $P \leq 0.05$ set for significance.

Results and Discussion

Out of the 502 cattle examined from Udon Thani, 331 were found positive with one or more parasites, giving an overall prevalence of 65.94 %. Buffaloes revealed the highest prevalence of 76.11 % followed by cow 60.25 %. The study revealed a significant difference ($P > 0.05$) in the prevalence of the gastro-intestinal parasites between the ruminants in the study area (**Table 1** and **Figure 2**).

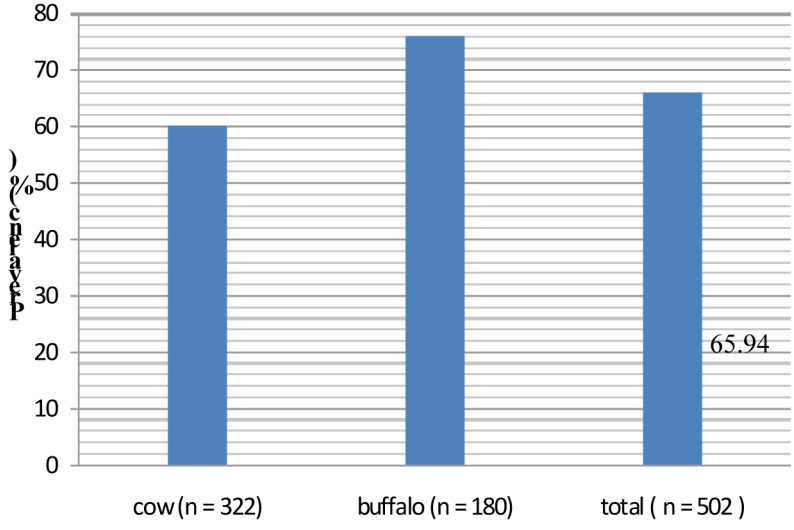

Figure 2 Prevalence (%) of GIT parasites

Table 1 Overall prevalence of gastro-intestinal parasites

Ruminant	Examined no.	Infected no.	Prevalence	χ^2 (P value)
Cow	322	194	60.25 %	3.84 (0.001)
Buffalo	180	137	76.11 %	
Total	502	331	65.94 %	

Table 2 Prevalence of gastro-intestinal parasites

Parasite species	Cow (n =322)	Buffalo (n =180)
	Infected no.	Infected no.
Fasciola spp.	34 (10.54 %)	37 (20.56 %)
Rumen fluke	84(20.08 %)	73(40.55 %)
Strongyloides spp.	44 (13.66 %)	10 (5.55 %)
Capillaria spp.	20 (6.21 %)	11 (5.55 %)
Trichuris spp.	16 (4.79 %)	6 (3.33 %)

Table 3 Prevalence of singled and mixed parasites infection

Type of infection	Prevalence	
	Cow (n = 322)	Buffalo (n = 180)
Singled parasite infection	112 (34.78 %)	61 (33.89 %)
Mixed parasites infection	82 (25.47 %)	76 (42.22 %)

Table 4 Type of prevention

Type of prevention	Prevention	
	Cow (n = 322)	Buffalo (n = 180)
Deworming	196 (60.86 %)	70 (38.88 %)
Non deworming	126 (39.14 %)	110 (61.12 %)

Gastro-intestinal parasites identified from fecal samples in the study along with their prevalence are shown on the **Table 2**. Rumen flukes were the most prevalent parasites recorded in both cow and buffalo. From the results obtained, buffaloes recorded the highest prevalence rates in Rumen fluke 40.55 % while those found in cow was 20.08 %. Other parasite infection found in cow were *Fasciola* spp. 10.54 %, *Strongyloides* spp. 13.66 % , *Capillaria* spp. 6.21 %, and *Trichuris* spp. 4.79 % while those found in buffalo were *Fasciola* spp. 20.56 %, *Strongyloides* spp. 5.55 %, *Capillaria* spp. 5.55 % , and *Trichuris* spp. 3.33 %, respectively (**Table 2**). This research study also revealed that singled parasite infection in cow was 34.78 % and mixed parasites infection was 25.47% and those in buffalo was 33.89% and 42.22 %, respectively (**Table 3**). This research also indicated that gastro-intestinal parasite infections found in cattle are quite high (65.94 %). This is similar to those found in the any other area of Northeast Thailand such as Kalasin (78.39 %), Burirum (87.2%), Mahasarakam (85.32%) and Surin (74.17 %) provinces (Aunpromma et al., 2005, Chantaraj et al., 1990 and Aunpromma et al., 2006). Both *Fasciola spp*. and Rumen fluke infection were the most serious in this study with the infection percentage in cow (30.62), and in buffalo (61.11), respectively. This may cause from fresh water snails (*Lymnea* spp.) prevalently found in water resources of Udon Thani. The *Lymnea* spp is the intermediate host of both *Fasciola spp*. and Rumen fluke (Srikitchankhan et al., 1988). Additionally, infection rate found in buffalo seemed as if it is higher than that found in cow. This effect can be explained in that the way of rearing buffalo is preferably let them to be directly immersed in water swamp facing fresh water snails (*Lymnea* spp.) as mention earlier (Skummun, 2012). From **Table 4**, the result indicated that 61.11 percent of buffalo and 39.13 percent of cow had never been dewormed. This may cause high gastro-intestinal parasites found in this areas as discussed (Chittapanlapong et al., 1991).

Conclusion

Gastro-intestinal parasite infection on cattle reared in Udon Thani is a considerable problem since it directly causes reducing growth, health and productivity of traditional domestic animals

of Thai farmers. This problem is also prevalently found in the other areas of Northeast Thailand and indicated that there are plentiful environmental contamination of gastro-intestinal intermediate hosts, particularly the host of *Fasciola* spp. and Rumen fluke. Consequently, the problem induces socio-economic problems in this region. Good cattle husbandry in parasite prevention associated with urgent effective treatment is recommended.

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