

SURVEY OF HELMINTHS IN CLIMBING PERCH (*ANABAS TESTUDINEUS*) FROM SAN SAI DISTRICT, CHIANG MAI PROVINCE

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Abstract. A helminthological study of *Anabas testudineus* was conducted. Fifty fish were collected from natural water resources in San Sai District, Chiang Mai Province, between July and September 2003. Seven species of helminths were recovered, as follows; one Monogenea species, *Trianchoratus* sp, was recovered at gill filaments, with a prevalence of 32%. In the intestine, the adult stage Acanthocephala, nematodes, and trematodes were found: *Pallisentis* sp (22%), *Camallanus* sp (11%), and *Allocreadium* sp (2%), respectively. Moreover, metacercarial stages of three species: *Stellantchasmus falcatus* (88%), *Acanthostomum* sp (78%), and *Centrocestus caninus* (70%), were examined in the body portion of the fish (gills, fins, scales, head, and muscles). Two species of metacercarial stage, *Centrocestus caninus* and *Stellantchasmus falcatus*, are helminths that can infect humans.

INTRODUCTION

Helminthiasis from food-borne parasites is a public health problem in Thailand, mostly in the northern and northeastern regions. Fish are prominent carriers because they are the most important source of protein and, reportedly an intermediate host of flukes, (Yamaguti, 1958; Pearson, 1964; Rudchadamas, 1982; Ditrich *et al*, 1990). Humans acquire worm infection by eating raw or partially-cooked fish. Trematodes are leading causes of helminthic infections in humans in northern Thailand (Rodamyos *et al*, 1998). Since parasitic diseases still cause serious concerns for public health in Thailand, helminth monitoring and control should be done to prevent and control the spread of worms. The purpose of this study was to investigate the prevalence and intensity of helminths in climbing perch fish (*Anabas testudineus*) in San Sai District, Chiang Mai Province.

MATERIALS AND METHODS

Fifty climbing perch (*Anabas testudineus*) were collected from natural water sources in 3 tambons of San Sai District (Nong Han, Mueang Len and Pha Phai) in Chiang Mai Province, from July to September 2003. Each fish was individually dissected into 6 portions to determine the prevalence and intensity of helminths (fins, scales, gills, head, muscle, intestine, and liver). The fins, scales, and gills were investigated under a stereomicroscope. The liver was cut into small pieces which were firmly pressed between two thick glass

plates, and then examined under a compound microscope. The intestine was dissected by needles and the presence of worms was determined using a stereomicroscope. The head and muscles were chopped and digested with crude extract solution of pineapple in a blender. Sequentially, the mixture was transferred into Erlenmeyer flasks, then incubated in a shaking water bath at 37 C for 2 hours. The metacercariae were isolated using graded sieves and then rinsed with 0.85% sodium chloride solution. The encysted metacercariae were studied and identified with excysted metacercariae under a compound microscope. All of the worms were fixed in 5% formalin, stained with hematoxylin or borax carmine, dehydrated in alcohol series, and mounted with permount. Species identification was carried out by morphological examination, as described by Yamaguti (1958) and Pearson (1964).

RESULTS

Out of 50 climbing perch (*Anabas testudineus*) collected from natural water sources in San Sai District, 49 were infected with 7 species of helminths. The species with the highest infection rate was *Stellantchasmus falcatus* (88%) while *Acanthostomum* sp, *Centrocestus caninus*, *Camallanus* sp, *Trianchoratus* sp, and *Pallisentis* sp were present in 78, 70, 66, 32, and 22%, respectively. The species with the lowest infection rate was *Allocreadium* sp (2%), as shown in Table 1.

The result revealed that *S. falcatus* showed the highest mean intensity, at 59.64 (2,982/50), while *Acanthostomum* sp and *C. caninus* were 41 (2,092/50) and 40.82 (2,041/50), respectively. In contrast, the adult stage of the trematode, *Allocreadium* sp, was

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found at the lowest mean intensity, at 0.02 (1/50). Examination of the occurrence of helminths in separate organs revealed that the main harboring organ of *S. falcatus* and *Acanthostomum* sp was muscle, with an intensity 42.98 (2,149/50) and 15.98 (799/50). The most infested organ of *C. caninus* was the gills with an intensity of 25.32 (1,266/50). On the other hand, the species having a specific infecting organ included, *Allocreadium* sp, *Pallisentis* sp, *Camallanus* sp, and *Trianchoratus* sp. There was no indication of helminth infestation of the liver (Table 1).

According to this survey, the dominant species were *S. falcatus*, *Acanthostomum* sp, and *C. caninus*, while only one adult stage trematode, *Allocreadium* sp, was the lowest in number (Fig 1).

DISCUSSION

In Thailand, the presence of fish-borne parasites has been reported by several researchers (Saengplong, 1979; Waikagul, 1991; Sirikanchana, 1997; Mard-arhin et al, 2001; Saenphet et al, 2001). This investigation found that 49 of 50 climbing perch (*Anabas testudineus*) harbored 7 species of worm; *Trianchoratus* sp, *Stellantchasmus falcatus*, *Centrocestus caninus*, *Acanthostomum* sp, *Allocreadium* sp, *Camallanus* sp, and *Pallisentis* sp. Comparison with previous results for helminthic infection in the same hosts in San Kamphaeng District, Chiang Mai Province (Panyaarj, 2003), found the species to be similar. In addition, infection by *Stellantchasmus falcatus* has been recorded as the highest prevalence (98%), with an intensity of 96, while *S. falcatus* in this study was high in prevalence (88%), and with an intensity of 59.64.

Infection of this fish by *S. falcatus* was new recorded (Panyaarj, 2003). *S. falcatus* metacercariae heavily infected half-beaked fish (*Dermogenus pusillus*) in Chiang Mai Province (Sripalwit et al, 2003). If Chiang Mai Province is an endemic area for *S. falcatus*, people tend to acquire infection with this fluke because of increases in the intermediate host. From *S. falcatus*, this study found other flukes in the Family Heterophyidae that are harmful to humans including *Centrocestus caninus* (Martin, 1958; Pearson, 1964; Tantachamrun and Kliks, 1978). Heterophyid flukes have been reported as causing intestinal irritation, accompanied by colicky pain and mucous diarrhea, with the production of excessive amounts of mucus and superficial necrosis of the mucous coat (Beaver et al, 1984; Chai and Lee, 2002).

This study confirmed the newly recorded intermediate host of *Stellantchasmus falcatus* as climbing perch (*Anabas testudineus*) in Chiang Mai

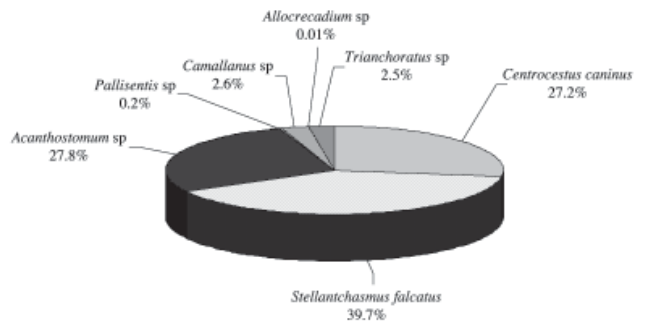


Fig 1- Percentage of helminths found in climbing perch collected from San Sai District, Chiang Mai Province.

Table 1 Occurrence of helminths from each organ of climbing perch (*Anabas testudineus*) from natural water sources in San Sai District, Chiang Mai Province, July September 2003.

Helminth species	Prevalence (%)	Total no. of helminths (mean intensity)						
		Muscles	Head	Gills	Fins	Scales	Intestine	Total
<i>Acanthostomum</i> sp	78	799 (16.0)	463 (9.3)	269 (5.4)	65 (1.3)	496 (9.9)	-	2,092 (41.8)
<i>Allocreadium</i> sp	2	-	-	-	-	-	1 (0.0)	1 (0.0)
<i>Camallanus</i> sp	66	-	-	-	-	-	196 (3.9)	196 (3.9)
<i>Centrocestus caninus</i>	70	529 (10.6)	242 (4.8)	1,266 (25.3)	3 (0.1)	1 (0.0)	-	2,041 (40.8)
<i>Pallisentis</i> sp	22	-	-	-	-	-	16 (0.3)	16 (0.3)
<i>Stellantchasmus falcatus</i>	88	2,149 (43.0)	598 (12.0)	192 (3.8)	14 (0.3)	29 (0.6)	-	2,982 (59.6)
<i>Trianchoratus</i> sp	32	-	-	186 (3.7)	-	-	-	186 (3.7)
Total		3,477	1,303	1,913	82	526	213	7,514

Province. The appearance of this fluke is important for public health control, for monitoring its dispersion. This study inferred that *S. falcatus* can be easily transmitted to human if they consume raw or partially-cooked fish.

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