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Research Article

Biodiversity of Parasites in Red Tilapia Fishes (*Oreochromis niloticus* Linn.) Cultured Cage in Trang River at Trang Province

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ABSTRACT

Biodiversity, especially morphology, distribution and type of parasites were studied in red tilapia fishes (*Oreochromis niloticus* Linn.) cultured cage from three farms at Trang river, Trang province of southern Thailand during April to September 2012. Ten sample of red tilapia fishes from each farm were sampled and examined for parasites two times per month. Seven genus (3 phylum) of parasites including *Cichlidogyrus* sp., *Dactylogyrus* sp., *Gyrodactylus* sp., *Oodinium* sp., *Epistylis* sp., *Trichodina* sp., *Ergasilus* sp. were found on gill filament of fish sample. % prevalence and mean intensity of infection was studied for seven Genuses of parasites in the gill filament of red tilapia fishes at three farms. The data showed that their infection level were different between farm. *Cichlidogyrus* sp. was found highest prevalence value (40%) on May at third farm. *Trichodina* sp. was found highest mean intensity (93.33%) on August at first farm. These parasites may induce the stress and weakness to the host which predisposing to other pathogens and cause fatal effect later on. This data can be used to protect the disease of fish from parasites.

Key words: Parasites, Trang River, Red Tilapia Fishes (*Oreochromis niloticus* Linn.)

INTRODUCTION

Trang river in southern Thailand is fresh water and connected with Andaman sea. It possesses a rich natural resource that appropriate to aquaculture such as cultured red tilapia fish in cage. Genetic improvement of red tilapia fish was carried out by crossbreeding between Nile tilapia fish (*Oreochromis niloticus*) and Java tilapia fish (*Oreochromis mossambicus*). The red tilapia fish is potentially economic which has fast growth rate. It is omnivore fish which can be cultured in the both of brackish water and fresh water. Parasite such as monogenean infect cultured the fish in cage causing serious damage to fish farming. There are a number of publication about disease from parasites in red tilapia fish [6] but none is reported about biodiversity of parasites from cultured red tilapia in cage at Trang river. In this study, biodiversity of parasites in red tilapia fish cultured in cage at Trang River, Trang province of southern Thailand were investigated.

Materials and Methods

Time schedule and fish collection:

From April to September 2012, the red tilapia fishes sample were caught two time per month, date 1-15 of month and date 16 – 30 of month from 3 farms. 10 red tilapia fishes sample was caught from each farm. Three hundred and sixty of total fishes sample of red tilapia fishes were length and weight.

Study area:

The first farm is brackish water farm at Kohkham village, Khantang District. The second farm is fresh water farm at Khuanthani village, Khantang district. The third farm is fresh water farm at Khuanthani village, Khantang district.

Parasite:

The level of parasites infection was assessed using standard epidemiological parameter: % prevalence value and mean intensity. % Prevalence value was used to determine common and rare genus of parasite. The parasites were identified [3,4,5]. % Prevalence value and mean intensity of parasites were determined [2].

Methods and laboratory techniques:

Caught fish were immediately placed into a tank containing local river water and air pump. After that caught fishes were transported to laboratory. Fishes were killed and all necessary data were recorded such as total length, and weight. Gill was removed after killed fish. Then ectoparasites on the gill filament of red tilapia fish sample were examined. Parasites were dislodged using bent needle, picked up with a fine pipette, and dropped onto a glass slide.

The specimens were covered with coverglass, the corners of which were sealed with nail enamel to prevent the mount from shifting. Ammonium picrateglycerine was used as a fixative by capillary induction under the coverglass to fix and clear the specimens [1]. All edges of the coverglass were sealed. The specimens were recorded by using compound microscope.

Results and Discussion

Table 1: % Prevalence and Mean intensity of parasites in red tilapia fishes.

Month	Farm	Type of parasites	% Prevalence	Mean intensity	
April (60 fishes)	1	<i>Cichlidogyrus</i> sp.	10	3	
		<i>Gyrodactylus</i> sp.	10	1	
	2	<i>Cichlidogyrus</i> sp.	10	1.5	
		<i>Gyrodactylus</i> sp.	5	2	
	3	<i>Cichlidogyrus</i> sp.	10	1.5	
		<i>Gyrodactylus</i> sp.	15	1.33	
May (60 fishes)	1	<i>Cichlidogyrus</i> sp.	5	1	
		<i>Gyrodactylus</i> sp.	15	1.33	
		<i>Trichodina</i> sp.	30	2.33	
	2	<i>Cichlidogyrus</i> sp.	15	1.67	
		<i>Gyrodactylus</i> sp.	5	1	
	3	<i>Cichlidogyrus</i> sp.	40	1.6	
		<i>Trichodina</i> sp.	5	1	
	June (60 fishes)	1	<i>Cichlidogyrus</i> sp.	5	2
			<i>Gyrodactylus</i> sp.	5	2
<i>Trichodina</i> sp.			5	1	
2		<i>Cichlidogyrus</i> sp.	30	1.67	
		<i>Gyrodactylus</i> sp.	5	1	
		<i>Trichodina</i> sp.	5	1	
3	<i>Cichlidogyrus</i> sp.	20	1.33		
	<i>Cichlidogyrus</i> sp.	10	1.5		
	<i>Trichodina</i> sp.	35	21		
July (60 fishes)	2	<i>Cichlidogyrus</i> sp.	15	1.33	
		<i>Cichlidogyrus</i> sp.	25	1.4	
	3	<i>Cichlidogyrus</i> sp.	25	1.4	
August (60 fishes)	1	<i>Gyrodactylus</i> sp.	10	2.5	
		<i>Trichodina</i> sp.	15	93.33	
	2	<i>Cichlidogyrus</i> sp.	25	1.8	
		<i>Gyrodactylus</i> sp.	5	2	
	3	<i>Trichodina</i> sp.	5	20	
		<i>Cichlidogyrus</i> sp.	5	1	
August	3	<i>Dactylogyrus</i> sp.	5	1	
		<i>Epistylis</i> sp.	5	90	
		<i>Cichlidogyrus</i> sp.	5	1	
	September (60 fishes)	1	<i>Cichlidogyrus</i> sp.	5	1
			<i>Trichodina</i> sp.	10	10
		2	<i>Dactylogyrus</i> sp.	10	1.5
			<i>Epistylis</i> sp.	25	4
		3	<i>Ergasilus</i> sp.	5	1
			<i>Oodinium</i> sp.	15	3
3	<i>Cichlidogyrus</i> sp.	35	1.57		
	<i>Dactylogyrus</i> sp.	5	1		
	<i>Oodinium</i> sp.	5	2		

Three hundred and sixty of total fishes sample of red tilapia fishes cultured in cage from three farms including first farm as brackish water farm, second and third farms as fresh water farm at Trang River were examined for ectoparasites from April to September 2012 as shown in Table 1. The data showed that parasites infection level were different between farms. Seven genera of ectoparasites were found which were classified to be three phyla. The first phylum as plathyhelminthes phylum consists of

3 genera such as *Cichlidogyrus* sp., *Gyrodactylus* sp., *Dactylogyrus* sp. which is called monogenean and were specific parasites to host. It found that *Cichlidogyrus* sp. was found highest prevalence value (40%) on May at third farm. The second phylum as protozoa phylum consists of three genera such as *Epistylis* sp., *Oodinium* sp., and *Trichodina* sp.. It found that *Trichodina* sp. was found highest mean intensity (93.33%) on August at first farm. The third phylum as arthropoda (Crustacean) phylum

consists of one genus such as *Ergasilus* sp. Morphology of seven genus of parasites were studied by using microscope as shown in figure 1. These parasites may induce the stress and weakness to the

host which predisposing to other pathogens and cause fatal effect later on. This data can be used to protect the disease of fish from parasites.

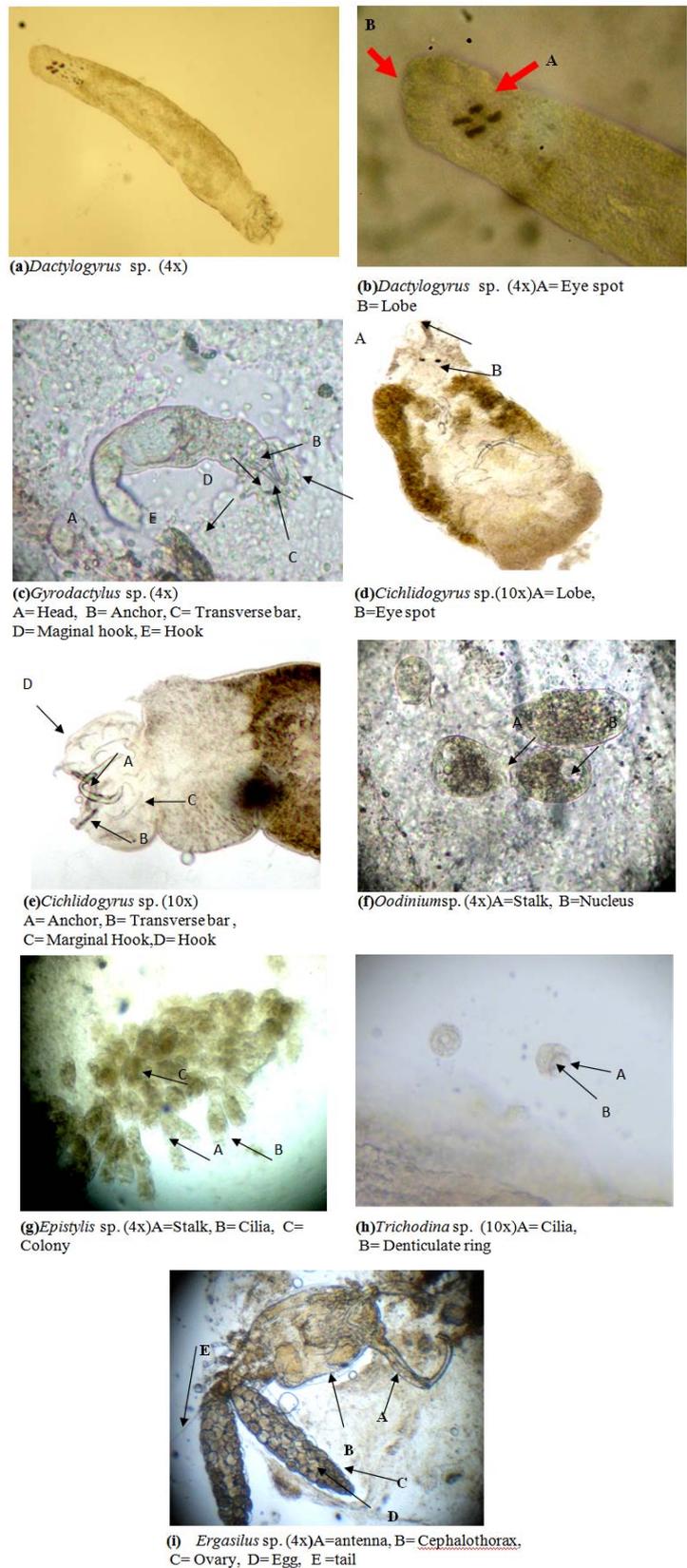


Fig. 1: Morphology of seven genus of parasites from gill filament of red tilapia fishes.

Morphology of *Dactylogyru* sp. (40x) shows in figure 1(a) and 1(b). It has two pair of lobe and two pair of eye spot at the head. At the end body, it has opishaptor, one pair of anchor, transverse bar, and fourteen pieces of marginal hook. Morphology of *Gyrodactylus* sp. (4x) shows in figure 1(c). It has two pair of lobe at head. At the end body, it has opishaptor as oval shape, anchor and 1 pair of central hook and sixteen pieces of hooklet around hook. Morphology of *Cichlidogyru* sp. (10x) shows in figure 1(d) and 1(e). The head has three lobes. It has one pair of eye spot at the head. At the end body, it has two pair large opishaptor, two pieces of transverse bar and fourteen pieces of small marginal hook. Morphology of *Oodinium* sp. (4x) shows in figure 1(f). It has stalk, big nucleus, one piece of stigma. Morphology of *Epistylis* sp. shows in figure 1(g). It has cilia around the mouth. The shape of nucleus is similar s-shape. Morphology of *Trichodina* sp. shows in figure 1(h). It has cilia and flat hook for sucking fish. Cilia cover area of mouth. Morphology of *Ergasilus* sp shows in figure 1(i). It has body, head, thorax, abdomen and tail. Head is similar oval shape which has 1 pair of antenna and one pair of eye spot. Thorax has cephalothorax connected to abdomen.

Conclusions:

Seven genera of parasite including *Cichlidogyru* sp., *Dactylogyru* sp., *Gyrodactylus* sp., *Oodinium* sp., *Epistylis* sp., *Trichodina* sp., *Ergasilus* sp. were found in red tilapia fish from three farms at Trang River, Trang province, Southern Thailand. *Cichlidogyru* sp. was found highest prevalence value (40%) on May at third farm. *Trichodina* sp. was found highest mean intensity (93.33%) on August at first farm.

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