

Treatment for Camallanus

by Charles H Harrison

The first time I saw this parasite was in a Convict cichlid back in 1970. It was a stranger to us then but since that time, I have lost several fish to this parasite. The following article has been written for the Killifish enthusiast, but it certainly applies to all the Tropical Fish Hobby.

Camallanus is an intestinal parasitic infection. This malady is due to a nematode or parasitic worm which is found in wild fresh and salt water fishes throughout the world. The infestation is characterized by, among other things, the presence of tiny red thread structures protruding from the anus of the infected host fish. Close inspection of the victim shows a swollen and irritated vent area. The worms actually protrude 1/3 to 1/2 inch from the anus of the infected fish. This is about one fourth to one third of the worm's length. The worms are red from the victim's blood in their gut.

As with most parasites, there are two main body functions of this worm, reproduction and nourishment. The attachment inside the fishes gut is by what appears to be a simple row of long hooks. Closer examination reveals a burr like structure. Attachment to the intestinal wall causes considerable damage to the host's intestines. The remainder of the body of the worm is dedicated to reproduction. Microscopic larvae from this parasite are constantly being produced and dumped into the water. A secondary host is necessary to carry on the life cycle. But, once established in the copepods found in most of our tanks, the nematode infection is easily transferred from hobbyist's aquarium to aquarium with nets, feeding utensils, water change devices and simple aspiration of splashes and spray from one tank to another. This carries the infection rapidly around the hobbyists' fish room in a matter of days.

The early signs of the parasite's presence are typically unnoticed. The victims show a minor swelling of the belly and may go off their food. Usually the fish have no problems laying eggs until the infection has reached the stage of showing protrusion from the anus. In the end, the anus and reproductive organs of the fish become so irritated and inflamed that secondary infection sets in and the swelling causes enough hemorrhaging to cause the victim to bleed to death or it dies from internal bacterial infection. In addition to this obvious outside appearance, the worm has been found in the body cavity of infected hosts. This may explain some of the mysterious deaths one sees in fishes which have been successfully treated for the nematode. The adult worm has died inside the body cavity and decayed inside the host fish. Sounds gruesome!

We Seem to Have Found a Cure!

Ken Laidlaw <kl@jach.hawaii.edu> made a posting on the KILLIE-List a couple of months ago in response to someone who announced that they “had a fish with worms sticking out from its ass.”

Ken said he had used a substance known as levamisole to kill these awful creatures.

I wrote to him and he back to me and we came up with a solution for an infection I have found in some of my fish.

On Thu, 26 Sep 1996 08:13:48 -0400 (EDT) I received this posting:

“Hi, Charles,

Here as promised is the recipe for Camallanus treatment.

1. Add 1.5 milliliter per 7.5 liter of 7.5% Levacide (levamisole hydrochloride) to each tanks to be treated. Mix the drug in a liter of water before pouring over the tank surface. If you obtain another strength of the drug (e.g. 1.5%, 3%) then just adjust dosage as required. For 1.5% add 1 ml in 1.5l of tank water.
2. After 24 hours perform 100% (as much as possible) water change whilst vacuuming the gravel. The water change is not required due to toxicity but to remove the possibility any offspring in the gravel.
3. No further treatments should be necessary.

Good luck and please let me know how you get on. Feel free to pass this information to whoever you like.

Regards, Ken L”

Well, I went to work to find the medicine. Actually as a chemist, I went to work to find the compound which Ken talked about, and I did. One of our dog friends is a Vet tech, and has been active enough with her group to be able through networking to come up with several large pills (3 grams) about the size of the end of your thumb. The pills weighed 3000 mg each. The activity of each was stated at 185 mg per pill. This didn't sound very logical, but I went on this assumption for dosage in my tanks. One and a half pill per 4 gallons of water. You couldn't see through the tank! Egad, What a mess.

The evening of the next day the worms protruding from a trio of Gularis were over half gone. I netted out one of the females and examined her vent for the pests. The worms fell out into the net. The individual worm was about 1 cm long, red and transparent. The head end was somewhat bigger around than the rest of the body. The gut was red and visible with simple hand lens magnification.

I was elated. These fish had come through a lot and they were some of the nicest Blue Gularis I have had in several years. I really wanted to see them survive. We had success. This was not the first time I had come across this parasite. A couple of years ago I got some fish from a local fish store which had come in with a bunch of plants from Florida. The little fish gave this parasite to my fish room and

in a matter of a week. I wound up flushing three 30 gallon tanks of various Tetras and Killies. I am very glad to have found a cure.

The actual story goes like this: There were several bags in a fish shipment to SLAKA. Several specimens showed the outward signs of the parasite. Trevor Meyer and I shared most of the fish of this shipment. Several adults which were stressed by the shipping were showing the effects of the parasite. But, this time we had relief. The Levamisole had done the trick and eliminated the worm completely. I wish I had known of this chemical back when I lost all those *C. adloffii* and Black Tetras. That was devastating!

Back to the story. Trevor was about to flush the victims of this infestation. His specimens were smaller (*A. cognatum* and *fulgens*) and even more stressed than my Blue Gularis and Deltaense. I gave him three of those pig pills and told him to:

Crush one of them into as fine a powder as possible and dissolve the powder in a cup of tank water. Add this mess to the 2 1/2 gallon drum bowl the cognatum were in. Add some air with an air stone or tubing and feed them with live food.

Change their water after a couple of days and lets see what happens.

WELL, the worms vanished! The fish are up eating like crazy and spawning again three days after the treatment. Trevor is happy, the fish are saved, and SLAKA is moving forward saving FISHDOM and the hobby from those awful parasites which hang from their victims' anus and slowly kill them from any number of things. Sounds a bit like some of the politicians I have known!

Since the treatment has worked so well, I decided to get some of this compound in its pure form and keep it around for others as well as myself. A medical chemical company which we deal with sells levamisole hydrochloride in 50 gram containers. I split this up into plastic bags to contain 5 grams each. The treatment dosage is 1.5 ml of a 7.5% solution in 2 gallons of water. If one dissolves one of these five gram packets in 3 ounces of water, that's about a 5% solution. Two milliliters of this 5% solution will treat 2 gallons of tank water. Eighteen to twenty drops makes a milliliter or about one medicine dropper full. One ml per gallon. This provides a 15 milligrams per liter treatment bath.

This 5 gram packet will stay good for at least a year if it is kept dry . The solution is good for 90 days. Five grams will treat 100 gallons of tank water. It is hard to overdose with this chemical. The fish in our study showed no side effects at all. Close examination of the tank water showed no effect on the protozoa or other tank flora either. The only thing which seemed susceptible was the parasites. The broad spectrum anthelmintic action of this chemical makes it a welcome drug in my fish room.

“Complete Book of Dwarf Chichlid” by Hans-Joachim Richter, published in 1989 by TFH, reports: “an illness that almost always appears only with wild-caught fishes and that one at first does not regard as an illness, is the infestation with nematodes. Only after some months can one observe the at first just barely a few millimeters-long nematodes hanging out of the anus. With increasing growth, these can extend up to 10 millimeters outside of the body. It is generally a question of Camallanus worms when we observe such an infestation. Despite the use of the most diverse measures, I was not able to control them. One should therefore remove and destroy infected fishes at the first sign of infestation. The following symptoms apply to a nematode infestation: emaciation with complete loss of appetite, rubbing, and slimy, whitish excrement. Whereas one can already suspect a Camallanus infection by the worms hanging out of the anus, other nematodes can be detected only through the microscopic examination of the excrement or the intestinal contents. Treatment is possible using food animals soaked in niclosamide.

Other authors have stated that the nematode infection is impossible to cure and fishes should be destroyed and the tanks which have contained them should be sterilized.”

The actual transfer of the nematode from fish to fish must occur in stages. There are 5 stages of development required to molt in the end into the reproducing adult. An intermediate host is required. The usual one is the cyclops. Other intermediate hosts have been conjectured. Daphnia have not been ruled out. The worm may reach several inches in length. Those normally found in our tanks in our fish would kill the host long before they reached full size.

The attachment of the creature to the fishes’s gut is from pinching from long structures of the head of the nematode. These longitudinal ribs grasp the folds of the gut and are capable of considerable damage if pulled from the host either by the aquarist or another fish looking for a wormy meal.

Considering the treatment and testing we have been able to accomplish, it would appear that we could recommend a prophylactic swim in a concentrated solution of levamisole to help rid the fishes of suspected infestations of various nematodes which includes the Camallanus. One should observe the victim for several days after treatment, however, as the full impact of the infection may not be seen immediately. Dead worms inside the fish may cause future mortality. The treatment dosage which is recommended for cattle and sheep ranges from 2 milliliters of 5 % solution per 100 pounds of body weight for cattle and 2 ml of a 1.4 % solution per 50 pounds of body weight for sheep. There is a statement on the package of levamisole which indicates that cattle and sheep which are maintained under conditions of constant exposure or renewal exposure should be re-treated within 2-4 weeks after the first treatment. This re-treatment of the affected tank and or victims sounds like a very good idea to aid in the complete removal of the parasite. Cattle are not to be treated with 48 hours of slaughter for

food which would indicate that you should not eat your killies after you treat them with this stuff unless you first destroy the chemical.

Recommendations:

Levasole (levamisole hydrochloride) is a broad spectrum anthelmintic and is effective against the following nematode infections in cattle and sheep.

Stomach Worms: (Haemonchus, Trichostrongylus, Ostertagia)

Intestinal Worms: (Trichostrongylus, Cooperia, Nematodirus, Bunostomum, Oesophagostomum) (Chabertia-sheep only) and

Lung worms: (Dictyocaulus)

References:

Additional information regarding the nasty worm has come from Marty Greenwell of the J. G. Shedd Aquarium in Chicago, private communications, Thank you Marty.

Fish Diseases and Disorders, V 1 Edited by P. T. K. Woo, Dept. Zoology, U of Guelph, Canada, 1995

The Manual of Fish Health, C. Andrews, A. Exell, N. Carrington, Tetra Press, 1988 (pp 176,80).

Parasitic Worms of Fish, H. Williams, A. Jones, Taylor & Francis, 1994 (pp139,40, Fig. 2.33.1-9