A SURVEY OF ANISAKID LARVAE IN MARINE FISH IN PENANG, MALAYSIA

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INTRODUCTION

Anisakiasis is found mainly in temperate countries and is caused by a group of nematodes belonging to the family Anisakidae. The normal definitive hosts of anisakid larvae are marine mammals such as dolphins. Human become infected with this group of parasite through eating raw or half cooked fish. Investigators have reported a high incidence of anisakine nematodes in some food fish in other parts of the world (Oshima, 1972; Smith and Wootten, 1978) and in this region from the Philippines and Indonesia (Cabrera, 1968; Hadidjaja *et al.*, 1978; Ilahude, *et al.*, 1978), but not from Malaysia thus a survey of this parasite in commercial food fish sold in fish markets in Penang was conducted.

MATERIALS AND METHODS

All the fish examined for anisakid larvae were obtained from the Pulau Tikus Fish Market, Penang, Malaysia. A midline insertion was made on the ventral side of the abdomen and the viscera was removed. The abdominal cavity was examined with the naked eye for parasites. The stomach and intestine were dissected and examined for parasites with the aid of a dissecting microscope.

Nematodes obtained were relaxed and killed in glacial acetic acid and preserved in 5% glycerine in 70% alcohol. The nematodes were cleared in lactopherol and temporarily mount in the same medium for identification.

RESULTS

A total of 104 fish belonging to 12 species from 6 families were examined for anisakid larvae (Table 1). All except one fish species were found to be infected with one or more type of anisakid larvae. Three types of anisakid larvae were found: *Anisakis* type 1 was found in 9 fish species, *Contracaecum* type B in 6 fish species and *Terranova* type B in 2 only. *Latianus malabaricus* has the highest mean intensity of infection of both *Anisakis* type 1 and *Contracaecum* type B.

DISCUSSION

Most of the anisakid larvae are found in the coelom of the fish examined. However, some are found in the intestine and these are very small worms indicating their recent entry. Anisakid larvae reported from marine fish in this region are found mainly in the coelom (Cabrera, 1968; Hadidjaja *et al.*, 1978; Ilahude *et al.*, 1978).

In the present observation, three type of anisakid larvae were found, of which *Anisakis* type 1 was the most abundant and *Terranova* type B the least. Hadidjaja *et al.*, (1978) and Ilahude *et al.*, (1978) found only two types *Anisakis* type 1 and *Terranova* type B, but not *Contracaecum* type B which is found in quite abundance in the present survey. Although the number of fish host examined was not large, it indicates the widespread of the anisakid larvae.

The survey of anisakid larvae in marine fish in Indonesia showed that *Caranx(s) crumenophthalmus* has the highest mean in-

Table 1

Prevalence of Anisakid larvae in marine fish sold in the market in Penang, Malaysia.

Fish Species	No. exam.	No. Infected	Anisakis type 1	Contracaecum type B	Terranova type B
Carangidae					
Megalaspis cordyla	10	5	50 (1.8)*	20 (1.5)	0
Selar crumenophthalmus	17	12	65 (18.4)	15 (1.3)	15 (2.0)
Latianidae					
Latianus johni	4	1	25 (1.0)	0	0
Latianus malabaricus	7	7	88.9 (33.5)	100 (104.9)	22.2 (3.0)
Latianus russelli	3	3	0	100 (7.0)	0
Mugilidae					
Liza subviridis	21	0	0	0	0
Scombridae					
Rastrelliger kanagurta	16	14	62.5 (4.1)	87.5 (3.9)	0
Serranidae					
Cephalopholis miniatus	2	2	100 (7.8)	0	0
Epinephelus areolatus	3	3	100 (13.3)	0	0
Epinephelus salmoides	7	1	0	14.3 (1.)	0
Stromateidae					
Formio niger	14	4	28.6 (1.3)	0	0
Pampus chinensis	10	1	10 (15.0)	0	0

*Mean intensity shown in parenthesis.

tensity of infection for *Anisakis* type 1 (21.2) and also for *Terranova* type B (6.3). Whereas in the present survey, *Latianus malabaricus* has the highest mean intensity for *Anisakis* type 1 (33.5) and *Contracaecum* type B (104.9) These difference in intensity of infection could be due to the feeding habit and sizes of these fishes. The size of *Latianus malabaricus* examined was fairly large (average length 33.8cm) and it is a carnivorous fish.

There is a lack of awareness regarding the possibility of anisakiasis in Malaysia and in the region. No human cases has been reported from Malaysia, although most human cases of anisakiasis were reported in the Far East especially Japan (Oshima, 1972; Smith and Wootten, 1978) and were caused mainly by *Anisakis* type 1. Although many Malaysians do not eat raw fish, the finding of anisakid larvae in the fish belonging to the family Serranidae indicates the potential risk of human infection as most Malaysian of Chinese origin prefer to eat this fish lightly cooked.

SUMMARY

A total of 104 marine fish belonging to 12 species in 6 families were examined for anisakid larvae. All except one fish species were infected with one or more types of anisakid larvae. Three types of anisakid larvae were recovered, the most abundant being *Anisakis* type 1 (9 out of 11 fish species) followed by *Contracaecum* type B (6 out of 11) and *Terranova* type B (1 out of 11).

Latianus malabaricus has the highest mean intensity of both *Anisakis* type 1 and *Contracaecum* type B. The public health hazard of anisakine nematodes is briefly discussed.

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REFERENCES

CABRERA, B.D., (1968). Anisakiasis - will it become a Public Health problem in the Philippines. *Acta. Med. Phil.*, *4* : 119.

HADIDJAJA P.; ILAHUDE, H.D., MAHFUDIN, H., BURHANUDDIN and HUTOMO, M., (1978). Larvae of Anisakidae in marine fish of coastal waters near Jakarta, Indonesia. *Amer. J. Trop. Med. Hyg.*, *27* : 51.

ILAHUDE, H.D., HADIDJAJA, P. and MAHFUDIN H., (1978). Survey on Anisakid larvae in marine fish from fish markets in Jakarta. *Southeast Asian J. Trop. Med. Pub. Hlth.*, *9* : 48.

OSHIMA, T., (1972). Anisakis and anisakiasis in Japan and adjacent area(s). In:*Progress of Medical Parasitology in Japan.* Meguro Parasitological Museum, Tokyo. Morishita J., Koniya, Y. and Matsubanjashi, H., eds. Vol. *4* : 303.

SMITH, J.W. and WOOTTEN R., (1978). Anisakis and anisakiasis. *Advances Parasit.*, *16* : 93.