Study of Endo-Parasitic Nematoda in Sargocentron Rubrum Fish at the Syrian Coastal Water

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Abstract

The study was performed to isolate and detect the endo- parasitic nematodes which found in the intestins of Sargocentron rubrum fish in three regions at the Syrian coastal (Al- marfaa, Ibn- Hanii and the Estuary).

173 fish of S. rubrum were collected as (53, 45 and 75) fish in the above regions respectively.

Results showed one species of endo-Nematodes in the intestines of the fish, which was the parasitic Cucullanus bioccai.

The species C. bioccai was found in the three studied regions in 20 S. rubrum fish with infection ratio attained 11.11, 20.75 and 5.33, in the same regions respectively.

Key words: *Parasitic, Nematode, Sargocentron rubrum, Cucullanus bioccai.*

I INTRODUCTION

The marine fish insure a big amount of white meat, which are poor in fat. Fishy economical incoming was effected negatively by exposure these fish to some pathogens as viruses, bacteria and parasites, because these sorts could get kinds of pathogenic parasite internally or externally, parasitic Protozoa or parasitic Metazoa as internal parasitism worms.

It could be discovered of infection of sea fish and fresh water fish by many kinds of parasitism worms, like *Cestoda* [1], [2] and *Capillaria* [3] and *Termatoda* [4] and *Nematoda* (Nemathelminths) [5] which is our subject here.

Many studies around the world have been performed as the study of [6]. These studies aimed to detect sorts of parasitism worms that infected fish, in addition to evaluate its pathogenicity [7]. However, studies like that are still in the beginning in Syria such as [8], [9], [10], [11], [12], [13] and [14].

The present study was aimed to detect some of *Nematodes* species that parasite into the intestines of *Sargocentron rubrum* fish.

S. rubrum belongs to Holocentridae, nightly active [15], found in all of the coastal regions of the Mediterranean white sea and north of Atlantic ocean [16].

II MATERIALS and METHODS

***A. Collect the fish*:** The study included three different regions at the Syrian coastal (Al marfaa, Ibn Hanii and the estuary).

The fish samples were moved alive, as soon possible, in plastic containers prepared with ventilation and full of water from the collect basin itself. The samples were taken to the laboratory in faculty of science at Tishreen University.

Electoaeiral pumps were used to supply an oxygen.

Samples were collected during 2013, and an age of fish was ranged between 35 days and a year.

Fig 1. The species Sargocentron rubrum

***B. Laboratory Study*:** Each fish was killed by hitting it on a head, then parasite intestines test was done, whereas the intestines was removed, and put separately inside Petri dishes containing water. Fish was opened by fine scissors, and examined successively by the eye, then by manual amplifier, then at last, by microscope in two ways:

a. The direct method: Samples were taken directly from intestines, and put on a slide to be examined by microscope.
b. Washing by water: the opened bowel washed by water and mucus membrane was scraped to be examined.

Fig 2. Dissection of Sargocentron rubrum

The worms that found were isolated by needles and put inside physiological solution 0.6% for 12 hours to relax. After that it was studies to define it, then it was fixed by formol 4% for 3-5 minutes, then colored by vinegar Carmen according to [17].

A number of existed worms was defined, also infection ratio and infection severity were calculated according to [18]. The infection ratio was calculated as followed:

infection ratio = (infected fish number / the total number) × 100.

Infection Severity = number of isolated parasites / number of affected fish.

III. RESULTS and DISCUSSIONS

173 fish of *Sargocentron rubrum* were collected from the studied regions, as following: 53, 45 and 75 fish in Ibn Hanii, Al Marfaa and The Estuary, respectively.

The length of collected fish ranged between (11.5-25) cm, and the weight ranged from 27 to 94 g (Table 1).

Table 1: Morphometer sizes of the collected Sargocentron rubrum fish

The site	Number of fish	The length (cm)	The weight (g)
Ibn Hanii	53	11.5 -25	27.98-94.88
Al Marfaa	45	11.5-21.3	27.75-64.49
The Estuary	75	12.3-22.9	12.3-57.29

Results showed only one species of Nematodes in the intestines of S. rubrum, the parasite Cucullanus bioccai.

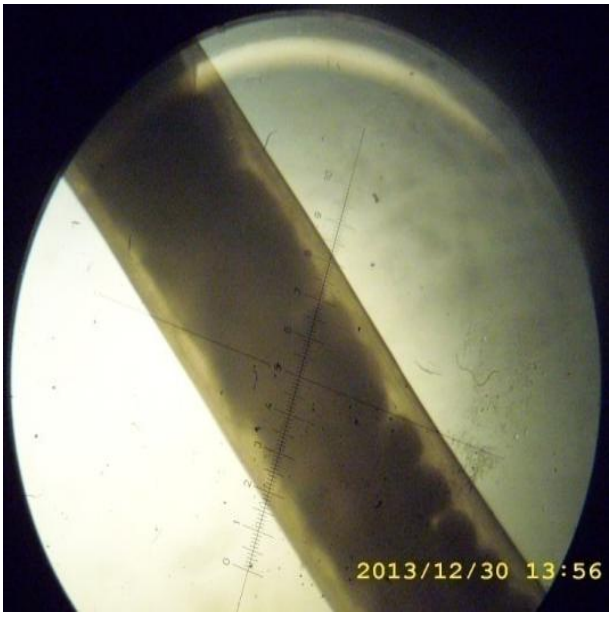
C. bioccai was isolated from 20 fish as: 11, 5 and 4 infected fish at each of Ibn Hanii, Al Marfaa and the Estuary, respectively.

Males of C. bioccai were shorter than females. The length of male ranged from 7- 9 mm, and the width ranged between 0.21- 0.19 mm. The length of females ranged between 18- 22 mm, and the width was 0.325- 0.328 mm.

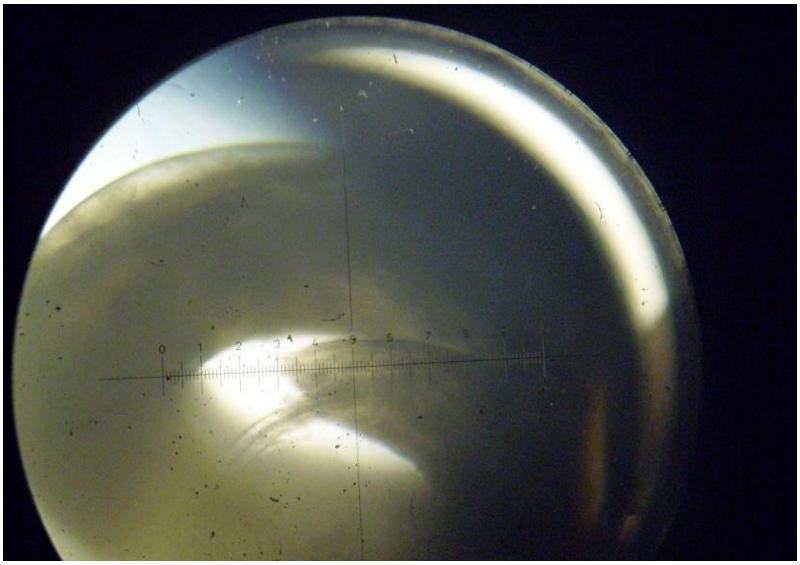
These recorded sizes were agree with [19].

The infection ratio attained 20.75, 11.11 and 5.33 at Ibn Hanii, Al Marfaa and The Estuary, respectively. The severity of infection attained 1.73, 1.8 and 1.75 in the same regions respectivley (Table 2).

The end of male



The egg inside females



The sexual spine of male

Fig 3. The parasite *Cucullanus bioccai*

Table 2: Infection ratio and severity of the studied fish by C. bioccai parasite.

The site	Infection ratio %	Infection severity %
Ibn Hanii	20.75	1.73
Al Marfaa	11.11	1.8
The Estuary	5.33	1.75

Table 3: Infection ratio and severity of the studied fish by *C. bioccai* parasite at Ibn Hanii region (LSD 5%= 10.2).

The month	Number of studied fish	Number of infected fish	Infection rate %	Number of isolated worm	Infection severity worm/ fish
11	0	0	c0	0	0
12	0	0	c0	0	0
1	0	0	c0	0	0
2	5	1	b20	1	1
3	8	3	a37.5	4	1.33
4	9	2	b22.22	4	2
5	9	4	a44.44	8	2
6	6	1	b16.66	2	2
7	6	0	c0	0	0
8	4	0	c0	0	0
9	6	0	c0	0	0

10	0	0	c0	0	0
total	53	11	20.75	19	1.73

Table 4: Infection ratio and severity of the studied fish by C. bioccai parasite at Al Marfaa region (LSD 5%= 6.4).

The month	Number of studied fish	Number of infected fish	Infection rate %	Number of isolated worm	Infection severity worm/ fish
11	0	0	c0	0	0
12	0	0	c0	0	0
1	0	0	c0	0	0
2	6	0	c0	0	0
3	7	2	a28.57	3	1.5
4	8	1	b12.5	1	1
5	9	2	a22.22	5	2.5
6	4	0	c0	0	0
7	3	0	c0	0	0
8	3	0	c0	0	0
9	4	0	c0	0	0
10	1	0	c0	0	0
total	45	5	11.11	9	1.8

Table 5: Infection ratio and severity of the studied fish by *C. bioccai* parasite at The Estuary region (LSD 5%= 10.45).

The month	Number of studied fish	Number of infected fish	Infection rate %	Number of isolated worm	Infection severity worm/ fish
11	4	0	b0	0	0
12	5	0	b0	0	0
1	2	0	b0	0	0
2	6	0	b0	0	0
3	7	0	0b	0	0
4	9	2	a22.22	2	1
5	9	2	a 22.22	5	2.5
6	8	0	0b	0	0
7	8	0	0b	0	0
8	6	0	0b	0	0
9	6	0	b0	0	0
10	5	0	b0	0	0
Total	75	4	5.33	7	1.75

Results showed that the species *C.bioccai* was isolated in hot seasons (from May to October), No infection had been seen at the first four months and at the last two months. This maybe reverse that the low temperature did not fit to occurrence the infection. The highest values to occurrence the infection were at 26- 27 °C, and the lowest values were at 21 °C. Or ,that infection circle in the decay stages of worms begins in cold period, which took time for worms to grow inside intestines which make it easy to show up during study.

The results agree with a study of [19] and with a study of [20]. Many studies referred to that the specie *Cucullanus bioccai* was isolated from different kinds of fish in different places around the world [21], [22], [23].

Finally, it was notable that was increasing worldwide attention by parasites of fish studies, that world studies showed that fish are infected by many sorts of parasite and other pathogenic factors [24].

IV. CONCLUSION

The present study demonstrated existence one species of endo- Nematodes in the intestines of the Sargocentron rubrum fish, which was the parasitic Cucullanus bioccai.

The species C. bioccai was found in the three studied regions in 20 S. rubrum fish with infection ratio attained 11.11, 20.75 and 5.33, respectively.

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