

Detection of Helminthes in *Planiliza abu* , *Mesopotamichthys sharpeyi* and *Cyprinus carpio* Fish in Missan and Neighboring Governorates / Southern Iraq

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Abstract

In current study 324 examination fish which were 184 *Planiliza abu* , 40 *Mesopotamichthys sharpeyi* and 100 *Cyprinus carpio* fish from scattered local markets in the Missan Governorate during the study period from July 2016 to April 2017, two genes were recorded of nematodes of *Eustrongylides* spp. and *Anisakis* spp. , the total infection ratio of worms is 26.54% , with ratio 7.61% in *Planiliza abu* , 30% in the *M. sharpeyi* and 60% in *C. carpio* .Which recorded *Eustrongylides* spp. 3.26% in *P. abu* only but absent in the other two species of fish, while recorded *Anisakis* spp. in *C. carpio* 60% , *M. sharpeyi* 30% and *P. abu* 4.35% .This is the first record of this genes in Missan Governorate, also a nematode *Eustrongylides* spp. is the first record in *P. abu* in Iraq . The aim of this study is to investigate of parasitic worms in *P. abu* , *M. sharpeyi* and *C. carpio* fish and compare with previous recording of parasitic worms in other fish of Iraqi Governorates to create an idea about the species of parasitic worms that infect Iraqi fish. It was conclude from this work that *Eustrongylides* spp. infect a few ratio of Iraqi fish, while *Anisakis* spp. infect most species of Iraqi fish with high infection ratio.

Key Words : *Eustrongylides* spp. , *Anisakis* spp. , Helminthes and Iraqi Fish.

التحري عن الديدان الطفيلية في أسماك الخشني والبنّي والكارب الشائع في ميسان

والمحافظات المجاورة لها / جنوب العراق

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الخلاصة

فحص في الدراسة الحالية 324 سمكة منها 184 من أسماك الخشني و 40 من أسماك البني و 100 من أسماك الكارب الشائع من الأسواق المحلية المنتشرة في محافظة ميسان خلال الفترة من حزيران 2016 إلى نيسان 2017 ، وقد سُجل جنسان من الديدان الخيطية وهما *Eustrongylides* spp. و *Anisakis* spp. ، سُجلت نسبة إصابة كلية للديدان 26.54% ، إذ كانت 7.61% في أسماك الخشني و 30% في البني و 60% في الكارب الشائع. سُجلت هذه الدراسة ديدان *Eustrongylides* spp. في أسماك الخشني فقط بنسبة 3.26% ولم تُسجل في النوعين الآخرين من الأسماك. بينما ديدان *Anisakis* spp. سُجلت في أسماك الكارب الشائع 60% و البني 30% و الخشني 4.35% . يُعد هذا التسجيل لهذين الجنسين هو التسجيل الأول في محافظة ميسان ، كما تُعد الديدان الخيطية *Eustrongylides* spp. التسجيل الأول في أسماك الخشني في العراق . هُدفَت الدراسة إلى التحري عن الديدان الطفيلية في أسماك الخشني والبنّي والكارب الشائع في ميسان ومقارنتها مع التسجيلات السابقة للديدان الطفيلية في أسماك أخرى للمحافظات العراقية لتكوين فكرة عن أنواع الديدان الطفيلية التي تصيب الأسماك العراقية . توصلت الدراسة الحالية إن الديدان *Eustrongylides* spp. تصيب الأسماك العراقية بنسبة قليلة ، بينما *Anisakis* spp. تصيب اغلب أنواع الأسماك العراقية ونسبة عالية .

الكلمات المفتاحية : *Eustrongylides* spp. ، *Anisakis* spp. ، الديدان الطفيلية و أسماك العراق .

Introduction

The fish contains very low Calories and low saturated fat and Cholesterol, fish are rich sources of nutrients such as calcium, iodine and phosphorus, acknowledging protein 18.5% of wet weight compared to beef is 16.8% and eggs is 13.6%, addition to amino acid important in maintaining body tissues and restoration of tissues, in the other side, it is an important source of economic health in Iraq (Abdullah, 2003) . When eating fish five times a week will reduce Incidence of blood clots more than half , the fish contains omega 3 which reduces the incidence 50% of the cancer (Akbar and Ghosh, 2005).

The fish is generally as a hosts for a large number of parasites, infected fish with tapeworm *Ligula intestinalis*, which can be kill it (Al-Saadi *et al.* , 1996). *Planiliza abu* is one fish species susceptible to parasites , Al-Taee (2008) was recorded infection rates for some parasites in *Planiliza abu* in Mosul in Northern Iraq, the infection rate was 44. 88% of the larval phase of *Diplostomum spathaceum* , 32. 95% at larval stage of *Ligula intestinalis*, Al-Taee and Zangana (2010) recorded infected 6% with nematodes were *Raphidiscaris* sp., *Anisakis* sp., *Eustrongylides* sp., *Cucullanellus minutes* and *Rhabdochona khazirensis* in freshwater fish in Ninevah Governorate , also Karawan *et al.*, (2012) recorded *Neoechinorhynchus iraqensis* and cysts of *Capillaria* spp. in AL-Diwaniyah in Iraq middle.

The studies in Iraq about fish parasites are multiple, but didn't cover all species of fish in all Governorates of the country, Missan had incited interest of researchers about diagnosing parasites that infect fish to this day, so that the current study aimed to diagnose parasitic nematodes in *P. abu* , *M. sharpeyi* and *C. carpio* fish .

Materials and Methods

Collected one hundred and eighty four *P. abu* (plate 1) , fourty *M. sharpeyi* (plate 2) and one hundred *C. carpio* fish (plate 3) during the study period from July 2016 to April 2017 from local markets in Missan Center , that fish can be collected from Various rivers and marshes sustain as well as collected from Neighboring Governorates . Then collected fish samples was transported to the laboratory of the gifted school in Missan using large portfolios of plastic and filled with ice to prevent damage . The fish were sectioned according to method of Lasee (2004), make incision along the fish when the line of the abdomen from the head to the anus and another incision between head and trunk accidentally using blade anatomy, then opened the fish to become clear for all internal organs and then opened up the gut and the rest of the visceral organs by scissors, on the other side the current study concentrated on examining fins , seashells and raised operculum to investigate ectoparasites, the nematodes were pulled by forceps.



Plate (1) *Planiliza abu* 15 cm in length .



Plate (2) *Mesopotamichthys sharpeyi* more than 25 cm in length.



Plate (3) *Cyprinus carpio* more than 30 cm length.

Results and Discussions

P.abu fish has been selected in the current study due to availability on local markets and the marshes, and can be get a large numbers of them in a relatively short time, it's also cheap in Iraq and many of peoples depend on it in feeding, as well as the current study chose *M.sharpeyi* and *C. carpio* due to availability of these fish and also preferred by the locals for a quality taste.

It was recorded two genus of nematode in fish that scattered in Missan markets which were *Eustrongylides* spp. and third larval stage of *Anisakis* spp. The total

infection rate were 26. 54% that 7. 61% in *P. abu* , 30% in *M. sharpeyi* and 60% in *C. carpio* (incidence = number * 100/total number). with absent of both genus of *Eustrongylides* spp. and *Anisakis* spp. in the same infected fish (Table 1 , Figure 1).

1- *Eustrongylides* spp. : These worms isolated from *P. abu* 3. 26%, but absent from *M.sharpeyi* and *Cyprinus carpio* . this nematodes isolated as pairs from body cavity near the head , red color, cuticle scratchy and accidental planned cuticle and ranging lengths from 1-2.5 cm (plate 4 , 5).

Eustrongylides spp. is the first registration in Iraq in *P.abu* fish . This genus of nematode classified depending on the morphological characteristics, Yanong (2006) confirmed that these worms infect multiple species of fresh and salt water fish and the worms are red color tending to orange and located in fish cavity and can be migrate in to the muscles or other body parts , as well as Al-Taee and Zangana (2010) confirmed that the adult worms are red color , have planned cuticle, located in the body cavity and they are found in pairs.

Current study was recorded 3. 26% infection of *Eustrongylides* spp. in *P. abu* only, but absent in *M.sharpeyi* and *C. carpio* , that similar to the recorded Al-Taee and Zangana (2010) in north Iraq was 4.5% in carp fish only . the few infections in fish of this nematodes belong to migration of worms of the director or from the skin , the worms distinguish by migration from the skin or the cavity to muscles and other body organs (Yanong , 2006). Although the fish is intermediate host of *Eustrongylides* spp. but the mature nematode that recorded in this study can be belong to indicate Yanong (2006) that *Eustrongylides* worms reportedly found naturally in some fish such as Mosquito fish and able to complete their life cycle in the body of the fish.

2- *Anisakis* spp.: It was recorded is the first registration in Missan , the results of the current study confirmed the presence of injuries in the third larval Larvae 3 (L3) to nematode *Anisakis* spp. *P. abu* , *M. sharpeyi* and *C. carpio* fish , the infection percentages are 4. 35% and 30% and 60% , respectively. *Anisakis* spp. isolated are white worms and large , the lengths ranging for 1.5-6 cm (plate 6).These parasites have been isolated from abdominal cavity of infected fish and from inside the Intestine. Also

noted that some in motion active after isolated from fish, and found some fish intestines ruptured with exit part of *Anisakis* spp. worms through it . The current work recorded a few of these worms in each fish from 1-5 in every fish. *Anisakis* spp. classification depended on the morphological characteristics of worms , Azbaid *et al.*, (2012) and Cipriani *et al.*, (2016) confirmed that *Anisakis* spp. is white colour and located in different locations of infected fish from its intestine, cavities , muscles and often in visceral organs in the abdominal cavity and the few in the muscles, also Cipriani *et al.*, (2016) confirmed the ability of the L3 larvae of migrate from the intestine to the tissues or body cavities during their migration will grow up to length higher than 3 cm, all these studies was similar with our study which that recorded *Anisakis* spp. ranging from 1.5-6 cm in lengths isolated from different location of body infected fish .The *Anisakis* spp. have the ability to go out from the skin of infected fish after four hours of death at 16°C (Costa *et al.*, 2003) , this applies to current study, that found some *Anisakis* spp. have simple animation after isolated it from infected fish . Total infection of *Anisakis* spp. in the current study was the highest percentage in *C. carpio* followed by *M. sharpeyi* and least in *P. abu*, some studies confirmed that these larvae are common in freshwater and marine fish such as study Al-Taee and Zangana (2010) that recorded infection in *Alburnus capito* 20% and *Chondrostoma regius* fish 2.85% that isolated from Khazir river in Mosul Governorate ; Abou-Rahma *et al.*, (2016) that recorded infection in European hake *Merluccius merluccius lessepsianus* in Hurghada city , red sea in Egypt .

Identification of *Anisakis* spp. larvae is very important because human can be infected after eating infected fish, also

the larvae in muscles of fish cause many economic losses (Shamsi and Suthar, 2016).



Plate (4) *Eustrongylides* spp. Isolated from *Planiliza abu* in Missan.

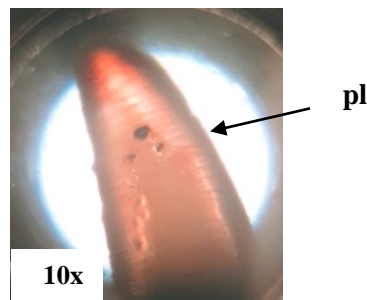


Plate (5) End Point of *Eustrongylides* spp. shows Cuticle Scratchy and Planned (pl).



Plate (6) *Anisakis* spp. Isolated from Missan Fish.

Table (1) Infection Percentages (%) of Nematode in Fish of Missan

| Species of Fish | Total Fish | Total Infection | Infection Percentages % | Kind of Nematodes | The Number of Infected Fish of Every Kind | Infection Percentages% |
|-----------------------------------|------------|-----------------|-------------------------|---|---|------------------------|
| <i>Mesopota michthys sharpeyi</i> | 40 | 12 | 30 | <i>Anisakis</i> spp. | 12 | 30 |
| <i>Cyprinus carpio</i> | 100 | 60 | 60 | <i>Anisakis</i> spp. | 60 | 60 |
| <i>Planiliza abu</i> | 184 | 14 | 7.61 | <i>Eustrongylid es</i> spp. <i>Anisakis</i> spp. | 6 8 | 3.26 4.35 |
| Total | 324 | 86 | 26.54 | <i>Anisakis</i> spp. <i>Eustrongylid es</i> spp. | 80 6 | 24.69 1.85 |

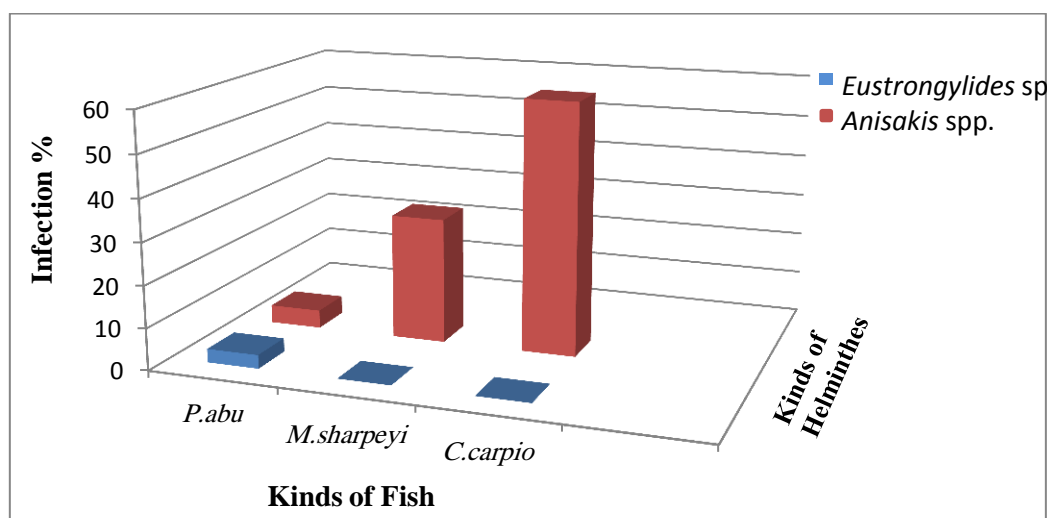


Fig. (1) Compare Infections of Parasitic Worms Among Fish of Missan.

Conclusion

The current study had detected that *Eustrongylides* spp. infect Iraqi fish in a few ratio , but *Anisakis* spp. infect most species of Iraqi fish with high infection ratio.

Recommendations

The fish should be cook well to eliminate the parasite that can be transmitted to humans and complete their life cycle inside him and caused him many diseases.

References

- Abdullah**, R. Kh. , (2003) The Nutritional Value of The Fish . Ninawa Agri. J. (1), 16-20
- Abou-Rahma** , Y. ; Abdel-Gaber , R. and Ahmed , A.K. , (2016) First Record of *Anisakis simplex* Third Stage Larvae (Nematoda , Anisakidae) in European Hake *Merluccius merluccius lessepsianus* in Egyptian Water. J. of Parasitol. Res. 1-8

- Akbar**, A. and Ghosh, S. , (2005) Anisakiasis : A neglected Diagnosis in The West . Dig. Liver Dis. 37(1), 7-9
- Al-Saadi**, H. A. ; Al-Hamdani, A. H. and Hussain , J.H . , (1996) Infection Study for *Cyprinus capriol* by *Spathaecum diplostomum* . Iraqi J. of Vet. Sci. (2), 92-98.
- Al-Taee**, A.F . , (2008) Endoparasites of The Fresh Water *Planiliza abu* in Mosul , Iraq . Iraqi J. of Vet. Sci . 22 (1), 25-29
- Al-Taee**, A.F. and Zangana , M. Gh. , (2010) Detection of Parasitic Nematodes in Some Fresh Water Fish in Khazir River in Ninevah Governorate. Iraqi J. of Vet. Sci. 25 (1), 29-38
- Azbaid** , L. ; Lamtai, A. ; Talbaoui, EL. M. and Chidi, F. , (2012) Occurrence of *Anisakis* spp. in Horse Mackerel (*Trachurus trachurus* L.) From The North Atlantic Moroccan Coasts . Moroccan J. of Bio. 12(8-9) , 51-57
- Cipriani** , P. ; Acerra, V. ; Bellisario, B. and Sbaraglia, G.L. , (2016) Larval Migration of the Zoonotic Parasite *Anisakis pereffii* (Nematoda : Anisakidae) in European Anchovy , *Engraulis encrasicolus* : Implication to Seafood Safety. Published by Elsevier Ltd , Food Control . 59 , 148-157.
- Costa**, G.; Pontes, T. ; Mattiucci, S. and Damelio, S. , (2003) The Occurrence and Infection Dynamics of *Anisakis* Larvae in the Black –Scabbard Fish , *Aphanopus carbo*, Chub Mackerel , *Scomber Japonicas* , and Oceanic Hors Mackerel , *Trachurus Picturatus* From Madeira Potugal . J. of Helm. 77(2) , 163-166.
- Karawan** , A. CH. ; Ab-Abed, A. and Ali, M. J. , (2012) Study of Parasites Isolated From Some Pure Water Fish *Planiliza abu* in Al-Dewania City . Al-Anbar J. of Vet. Sci. (2), 142- 145
- Lasee** , B. , (2004) Laboratory Procedure Manual . 2nd Ed ., LaCrosse Fish Health Centre . Chapter 8 , 1-37
- Shamsi** , S. and Suhar , J. , (2016) Occurrence of Terranova Larval Types (Nematoda : Anisakidae) in Australian