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Infection of *Abramis brama* with *Ligula intestinalis* in aras reservoir (West Azerbaijan- Iran)

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ABSTRACT

Ligula is thought to be the most important tapeworm that infests Abramis brama and can be a major threat to natural and farmed fish populations .The pleurocercoid stages of Ligula intestinalis were found in the body cavities of 81 among the 120 Abramis brama examined from the Aras Reservoir, from October 2012 to December 2013. Mean prevalence of this parasite was 67.5% Mean intensity of infection of L. intestinalis in Abramis brama was 1.77. The highest infection of Ligula intestinalis in abdominal cavity can be compress or displace the organs. Our findings revealed that the Ligula intestinalis infected is very high in Abramis brama in Aras reservoir.

Keywords: *Ligula intestinalis, Abramis brama*, West Azerbaijan, Iran

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INTRODUCTION

Ligula is thought to be the most important tapeworm that infests Abramis brama and can be a major threat to natural and farmed fish populations (11). The virulent nature of this parasite leads it to commonly filling every available space within the body cavity whatever the initial size of the host; the weight of the parasite can, on many occasions, exceed the total body weight of the fish (3). Once hosted by the fish the parasite will usually reside in the body cavity for the duration of the fish's life (1). Among parasites of fishes Cestods of digestive tract and abdominal cavity are the largest group of parasites that can decrease the productivity (2). Ligula intestinalis is one of the most abundant fish species in Iran reservoirs. Although *A. brama* is not presently exploited by the commercial fishers, this species has a great potential to support a profitable subsidiary fishery. Since it could be converted to fish meal to feed livestock. Furthermore *A.brama* plays a significant role in the trophic dynamics of the reservoir ecosystems due to its high abundance and effective feeding on food resources.

MATERIALS AND METHODS

Abramis brama was caught from the Aras Reservoir using gillnets and then we bought them. Totally 120 specimens in different sizes from Aras reservoir in North-West of Iran was investigated and all fishes were taken alive. They were dissected directly after being brought to the laboratory dose to catching place. Parasites were collected from abdominal cavity and identification according to Gussev (1985) and Gibson et al (2002) (5-7). The size range of the 120 specimens of fish examined was from 26 to 41 cm total length and 200 to 810 g body weight (excluding weight of the parasite). The length of the tapeworms observed in the body cavities of *A. brama* in the Aras Reservoir ranged

from 4 to 119 cm (mean – 46 cm). And the weight of the tapeworms observed in the body cavities of *A. brama* in the Aras Reservoir ranged from 2 to 31.9 gr (mean – 17 gr).

RESULTS

Pleurocercoid larval stages of *Ligula intestinalis* (L.) were found in the body cavities of 81 of the 120 of *A.brama* examined from the Aras Reservoir from October 2009 to December 2009. The highest infection of *Ligula intestinalis* in abdominal cavity can be compress or displace the organs. The results showed that 67/69% of fishes were infected with the *Ligula intestinalis* and Mean intensity was 1/77.Mean prevalence (%) of *L. intestinalis*, as defined by Bush et al. (1997) is 23.38% (4). Each fish often contained single or second and sometimes three tapeworms except in two occasions when there were four and five tapeworms per fish.

Table-1: Occurrence of *Ligula intestinalis* in the body cavities of *Abramis brama* from the Aras Reservoir

Month	No. of fish		Prevalence
	Examined	Infected	
October	40	29	*72.5*
November	40	28	*70*
December	40	24	*60*
Total	120	81	-
Mean	40	27	*67.5*

DISCUSSION AND CONCLUSION

Ligula intestinalis is a pseudo phyllideam cestode which in its plerocercoid stage infects a range of fresh water fish species (9, 11). This parasite is known to be the causative agent of ligulosis disease in fish. *L. intestinalis* occurs in fish in most parts of the world such as thespottail shiner *Notropis hudsonius* in Dauphin Lake in Manitoba, Canada (Szalai et al. 1989)(5), roach *Rutilus rutilus* and gudgeon *Gobio gobio* in the United Kingdom (10). Kosheva (1956; cited by Bauer1962) reported poor CF of bream *Abramis brama* infected by *L. intestinalis*in Kutuluk Reservoir, Russia (2). The parasite is known to have other effects on the host fish (2). Due to pressure *L. intestinalis* causes degeneration of the gonads and the subsequent partial or complete sterilization of fish. Changes in blood pressure were also noted in fish suffering from ligulosis (2). This study reports infection of *Abramis brama* with *Ligula intestinalis* in Aras reservoir (west Azerbaijan-Iran). Our findings revealed that the *Ligula intestinalis* infected is very high in *Abramis brama* in Aras reservoir. There are numerous health implications when hosting *Ligula*. Clear distension of the body wall as the worm increases in size is probably the most visually astounding feature (12). This distension can cause impairment of muscle development and also reduces streamlining; this causes and increased risk of predation. There can also be affects on several blood parameters. Reduced growth, anemia, dark coloration and erratic swimming are also side effects of ligula, but the largest chance of mortality occurs through the susceptibility of secondary infections. Also gonads remained small in female infected fishes. There is a possibility that this parasitic infection can spread to fish communities in other reservoirs of the country when suitable conditions prevail (8). Due to the possible effects of parasite on the biology and physiology of the host fish, further investigations on ligulosis in *A. brama* are urgently needed in Aras Reservoir. This is of particular importance because *A. brama*a significant role in the trophic dynamics of reservoir ecosystems.

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