

INVESTIGATIONS ON THE INFESTATION IN SOME GILL PROTOZOOSYS IN JUVENILE CYPRINIDS

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Abstract

The investigations conducted on a sample of 68 juvenile cyprinids (33 crucian carp, 20 carp and 15 silver carp), breed and maintained in a semi development fishery, type household from Gherla area, Cluj, taken in April-May 2011, regarding the incidence and the intensity of parasitism in some localized protozoosys gill (criptobiosys, ihtioftiriosys and trichodiniiosys), shows some different aspects. The incidence of parasitism in criptobiosys has low values in juvenile crucian carp and silver carp (9.0% and 6.6%) and medium (20%) in juvenile carp. Instead, in the intensity level of parasitism in juvenile crucian carp and silver carp dominate low infestations (66.6% and 100%) and at the juvenile carp average infestations (50%). Extensity of ihtioftiriosys had highest values in juvenile silver carp (26.6%), followed by juvenile crucian carp (21.1%) and minimum values for juvenile carp (10.0%). At crucian carp dominate the medium infestation (50.0 %). The incidence of Trichodiniiosys has elevated high values for crucian carp (48.4%) and average values for silver carp and carp (40.0% and 35.0%). Different aspects of parasitism intensity appear namely, at the crucian carp and silver carp juvenile carp dominate low infestations (71.5% and 66.6%) and in juvenile carp dominate the medium and heavy infestations (50.0%).

Key words: juvenile, infestation, protozoa, extensively

INTRODUCTION

The aquatic environment is currently an almost inexhaustible reservoir of bio-resources edible that can be exploited by man [1, 4, and 5]. However, production of edible aquatic creatures, both in natural waters and in particular aquaculture planning, is often affected by the action of many biotic pathogens which cause economic losses produced by major diseases such as mortality and quality of these impairments bodies. An important group of pathogens involved in disease emergence and evolution of fish fauna serious parasitic protozoa is located in various tissues and organs. [3, 6].

Thus in the present paper we intend to carry out investigations on the infestation level (incidence and intensity of parasitism) in some protozoosys localized in gill in

juvenile cyprinids (carp, crucian carp, silver carp) and maintained in semi intensive development.

MATERIAL AND METHODS

Investigations on the incidence and intensity of parasitism in some protozoosys gill and pathological picture of changes in juvenile cyprinids (crucian carp, carp and silver carp) fish increased and maintained in semi facilities, household type, were conducted in April-May 2011, at a unit of the private fish Gherla Cluj. There has been fished control Harvesting 68 juvenile summer, running copies, minus variants "(33 juvenile crucian carp, 20 juvenile carp and 15 juvenile silver carp).

Biological samples for parasitological examination, and microscopic, were taken directly from live fish or agony, as a shrine (prepared fresh) and for microscopic examination were used 20X and 40X

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objectives [2, 7]. The diagnosis was established by microscopic visualization of parasites in the field, and their mobility namely the presence of parasitism. The intensity was established by counting parasites in the preparation, saying that:

- Heavy infestation: more than 5 parasites / preparation
- Average infestation: between 3-4 parasites / preparation
- Reduced infestation: up to 2 parasites / preparation.

Along with performing native microscopic preparation and painting appreciated gill pathological changes, correlating with the severity of parasitism intensity.

RESULTS AND DISCUSSIONS

The microscopic examination of gill native preparations performed on a sample of 68 cyprinids species, juvenile fish crucian carp, carp and silver carp on the presence of gill protozoosys, highlights the following:

Incidence of parasitism in criptobiosys value is presented in table and chart 1.

Data presented in table and chart 1 show low values of fish affected by criptobiosys. However there are some differences in the

infestation, depending on the species and juvenile carp namely values of 20.0%, 9.9% crucian carp and silver carp 6.6%. The average is 11.7% incidence of parasites.

The results of microscopic examination of the intensity of parasitism in Cryptobiosys are presented in table and chart. 2.

Table 1 The incidence of parasitism with *Cryptobia branchialis* in young cyprinid species (crucian carp, carp, silver carp)

Species	No. Samples	From witch	
		Positive	%
Crucian carp	33	3	9
Carp	20	4	20.0
Silver carp	15	1	6.6
Total	68	8	11.7

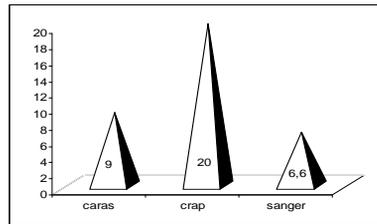


Fig. 1 The incidence of parasitism with *Cryptobia branchialis* in young cyprinid species

Table 2 Intenisty of parasitism with *Cryptobia branhialis* at juvenile cyprinids (crucian carp, carp, silver carp)

Species	Total	Positive cases					
		From witch:					
		Massive infestation		Medium infestation		Low infestation	
		No. samples	%	No. samples	%	No. samples	%
Crucian carp	3	-	-	1	33.0	2	66.0
Carp	4	-	-	2	50.0	2	50.0
Silver carp	1	-	-	-	-	1	100.0
Total	8	-	-	3	37.5	5	62.5

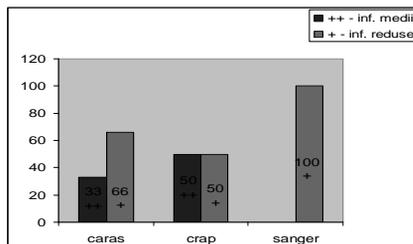


Fig. 2 The variation of intensity of parasitism in criptobiosys at the three species of cyprinid

The data obtained shown a reduced intensity of parasitism in criptobiosys at the three cyprinid species studied. Thus, juvenile carp dominate the low infestation (66.6%), followed by secondary infestation (33.0%). In contrast to juvenile carp infestation level have identical values (50.0) infestations and poor environments, and in juvenile silver carp are insignificant. The localization of *Cryptobia branhialis* in the lining of gill, through its movements, is causing local continues irritation, followed by acute congestion and mucous hyper secretion, with negative influence on respiration [6,8]. Data value in ihtioftiriosys parasitism obtained by microscopic examination of native preparations gill scrape in juvenile cyprinids is shown in table and chart. 3.

The microscopic results obtained after sample examination on the incidence of ihtioftiriosys at cyprinid juvenile, shown a higher level than in the case of criptobiosys. The maximum values are obtained from silver carp (26.6%) followed by crucian carp (21.2%) and minimum at carp (10.0%).

It is known that ihtioftiriosys is correlated in addition with the hygiene conditions and food, also with water temperature which has an influence on the life cycle of the parasite, reducing it to a few days when water temperature exceeds 20°C [3, 6]. In this context the incidence

of parasites obtained in April is rather modest, and may explode in the coming months when the ambient temperature increases more.

Table 3 The level of extension of ihtioftiriosys at juvenile cyprinids (crucian carp, carp, silver carp)

Species	No. samples	From witch	
		Positive	%
Crucian carp	33	7	21.2
Carp	20	2	10.0
Silver carp	15	4	26.6
Total	68	13	19.0

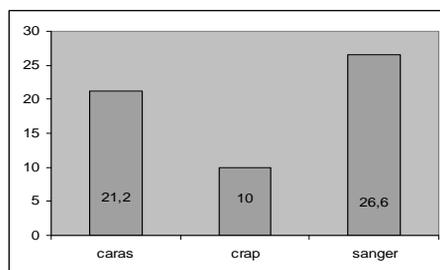


Fig. 3. The variation of extension of ihtioftiriosys at juvenile cyprinids (crucian carp, carp, silver carp)

Laboratory results obtained, the intensity of brood parasitism in ihtioftiriosys at cyprinids are presented in table and chart. 4.

Table 4 The intensity level of parasitism with *Ichthyophthirius multifiliis* at juvenile cyprinids (Crucian carp, carp, silver carp)

Species	Positive samples						
	Total	From witch					
		Massive infestation		Medium infestation		Low infestation	
		No. samples	%	No. samples	%	No. samples	%
Crucian carp	7	-	-	2	28.5	5	71.5
Carp	2	1	50.0	1	50.0	-	-
Silver carp	4	1	25.0	2	50.0	1	25.0
Total	13	2	15.3	5	38.4	6	46.1

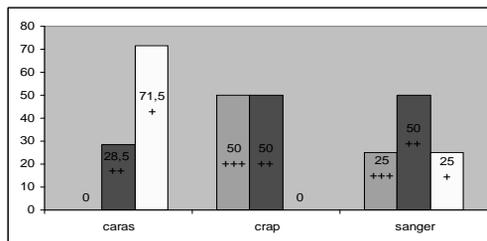


Fig. 4 The intensity of variation of ihtioftiriosys at juvenile cyprinids

The data presented above show different levels of intensity in *Ihtioftiriosys* parasitism in juvenile cyprinids according to the specie. This way the crucian carp dominate the low infestation (71.5%), followed by secondary infestation (28.5%). In contrast to crucian carp, the infestation level at carp had identical values (50.0%) in medium and massive infestation and at the silver carp are the dominant medium infestation (50.0%) and equal values in low and massive infestation (25.5%). The data value obtained on the incidence of parasitism in trichodiniosys is presented in table and chart 5. The extensity of parasites, the data presented above, have similar values with small differences depending on specie. The maximum values were recorded in juvenile crucian carp (48.4%), followed by silver carp (40.0%) and carp (35.5%). Intensity level to brood parasitism in trichodiniosys at juvenile cyprinids is presented in table and chart 6.

Table 5 The incidence of trichodiniosys at juvenile cyprinids according to the specie

Specie	Nr. samples	From witch	
		Positive	%
Crucian carp	33	16	48.4
Carp	20	7	35.5
Silver carp	15	6	40.0
Total	68	29	42.6

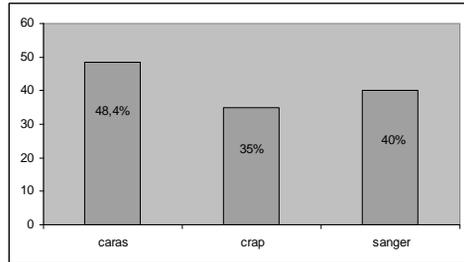


Fig. 5 Extension of parasitism with *Trichodina* sp., at juvenile cyprinids

Table 6 The intensity of parasitism with *Trichodina* sp. at juvenile cyprinids (crucian carp, carp, silver carp)

Specie	Total	Positive samples from witch					
		Massive infestation		Medium infestation		Low infestation	
		Total samples	%	Total samples	%	Total samples	%
Crucian carp	16	1	5.5	7	43.8	8	12.5
Carp	7	1	14.2	2	28.5	4	57.1
Silver carp	6	1	16.6	1	16.6	4	66.6
Total	29	3	10.4	10	34.4	16	55.1

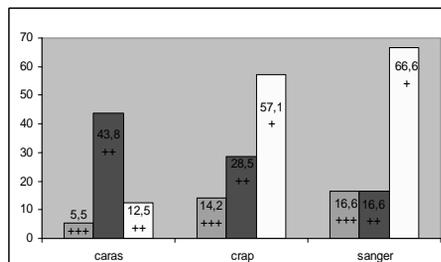


Fig. 6 The intensity of variation of trichodiniosys at juvenile cyprinids (crucian carp, carp, silver carp)

The data presented highlight the fact that at juvenile crucian carp dominates the low infestation (71.5%), followed by secondary infestation (28.5%). In contrast, the

percentages values of carp brood parasitism intensity are identical (50.0%) in large and medium infestations and in juvenile silver carp dominate the low infestation (66.6%)

and medium and heavy infestations have equal values (16.6%).

The results of pathology examination performed at gills at the fish samples under study, reveals a different picture lesion correlated with the intensity of parasitism and parasitic species. Pathological changes in small infestations caused by parasites in the gill epithelium are reduced only discernible, translated by perifocal vascular congestion, sometimes with the presence of haemorrhage [5, 6, and 7]. Instead, the average infestation and especially in the massive picture gill lesion is seriously, dominated by necrosis gill epithelium surface more or less flat, pinpoint haemorrhages, gill epithelial hyperplasia sometimes compensatory, with plenty of mucus.

CONCLUSIONS

Investigations conducted on a sample of 68 juveniles of the species cyprinids, crucian carp, carp and silver carp, on the incidence and intensity of parasitism in some localized protozoosys gill (criptobiosys, ihtioftiriosys and trichodinosys) and gill lesion picture from a private household unit type fish reveals the following:

1. The incidence of parasitism in criptobiosys had low values in juvenile crucian carp and silver carp (9.0% and 6.6%) and an average of 20.0% in juvenile carp.

2. Intensity level to brood parasitism in criptobiosys in cyprinids had different values depending on the species to juvenile crucian carp and silver carp dominate infestations and reduced 66.6% and 100%, and in juvenile carp infestation average 50%.

3. Extensivity of ihtioftiriosys are highest in juvenile silver carp, 26.6% followed by 21.2% juvenile crucian carp and minimum values, 10.0%, for carp.

4. The intensity of parasitism in ihtioftiriosys differs depending on the species. The crucian carp dominate low infestation and 71.5% in silver carp and carp dominate the 50.0% average infestation.

5. Trichodinosys incidence has elevated a value of 48.4 at the crucian carp %, followed by silver carp and carp 40.0% 35.0%.

6. The intensity of parasitism in trichodinosys have different values namely crucian carp and silver carp dominate juvenile infestations reduced 71.5% and 66.6% and in juvenile carp medium and heavy infestations dominate 50.0%.

REFERENCES

- [1] Bud, I., S. Diaconescu., M. Mudure. 2004. Creșterea crapului și a altor specii de pești. – Editura Ceres, București.
- [2] Cozma, V., O. Negrea., C. Gherman. 1998. Diagnosticul bolilor parazitare la animale. Ed. Genesis. Cluj-Napoca.
- [3] Lom, J.& Dycova, I., 1992 – Protozoa parasites of fishes. Elsevier Editura.
- [4] Miresan Vioara, Adel Ersek, Camelia Răducu, 2003 – Fiziologia animalelor domestice. Risoprint. Cluj-Napoca.
- [5] Muntean, Gabriela., D.Bogatu, 2003 – Tratat de Ihtiopatologie .Editura Excelsior Art, Timișoara
- [6] Negrea,O., 2007 – Bolile peștilor – editura Academicpres Cluj-Napoca.
- [7] P.T.K., WOO 2006 – Fish Diseases and Disorders. Vol I. Protozoan and Metazoan Infections. Second Edition. CAB International 2006.
- [8] Schiaperclous, W., 1979 – Fishkrankheiten Vol 1.2. p 1-510, 512-943 Akademic Verlag Berlin.