

Histological and hematological alterations of silver catfish *Rhamdia quelen* highly parasitized by *Lernaea cyprinacea*

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ABSTRACT: The main objective of this study was to evaluate the histological and hematological alterations of silver catfish *Rhamdia quelen* (Quoy & Gaimard, 1824) against intense parasitism by anchor worm *Lernaea cyprinacea* Linnaeus, 1758. Thirteen fish specimens were collected at the Fish Genetic Improvement Unit (EPAGRI/CEDAP), Brazil. After acclimatization, the fish were anesthetized for blood collection, and the samples were used for counting thrombocytes, total leukocytes, differential leukocytes and for quantification of total erythrocytes. Afterwards, the animals were euthanized, the parasites removed and quantified, and the portions of the affected tegument fixed in 10% buffered formalin. All the analyzed animals were parasitized by *L. cyprinacea* with mean intensity of 192 specimens per fish. The hematological profile of the animals was different from that reported for healthy fish. Immature leukocytes were the most abundant cells, followed by monocytes, lymphocytes, neutrophils, and periodic acid–Schiff-positive granular leukocytes. A small number of neutrophils were present in the bloodstream of parasitized fish, while histological examination evidenced the accumulation of this cell type near the place of infection by the parasite. Total leukocytes correlated significantly and positively ($r = 0.6$, $p = 0.030$) with the intensity of *L. cyprinacea* infection and the fish weight. Histological changes included hemorrhage, liquefactive necrosis and connective tissue disarrangement, necrosis, granulomatous inflammation, mononuclear and polynuclear inflammation, as well as hyperplasia and hypertrophy of the alarm and mucous cells. The *L. cyprinacea* infection intensity caused deleterious changes both in the hematological profile and the integument of *R. quelen*, confirming the pathogenic potential of this parasite to the affected fish species.

KEY WORDS: Anchor worm · Histopathology · Hematology · Fish farm · Disease · Catfish

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1. INTRODUCTION

The silver catfish *Rhamdia quelen* (Quoy & Gaimard, 1824) is a fish species of great economic interest because of its high market value and the ease with which it adapts to captivity (Baldisserotto

& Radünz 2004). This catfish species occurs in the Neotropical region of Brazil, which presents an ideal climate for the rapid propagation of opportunistic pathogens, favoring mainly those with a direct life cycle (Thatcher & Brites-Neto 1994, Barker & Cone 2000).