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Hematology and blood morphometric pattern of four tropical fish species with economical importance

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Aquaculture has become one of the most important activities of Brazilian agribusiness. The use and validation of standardized non-lethal and expressive methods to monitor the status of fish health is being considered a major issue to assure the expansion of fish production. Thus, establishment of hematological patterns should be used as a reference to evaluate the status of fish health to be considered one of the main tools to assess the status of health index of different species. The basal hematological profile of jundiá (*Rhamdia quelen*), Nile tilapia, piracanjuba (*Brycon orbignyanus*) and pacu (*Piaractus mesopotamicus*) has been characterized. Fishes were maintained during 30 days in experimental glass aquariums, in closed circulation system, well aerated, with constant temperature. The water quality parameters in the aquarium were daily measured. At the end of the experimental period, fish were anesthetized and blood was collected from caudal puncture with heparinized syringe, for hematological analysis. The hematological procedures of erythrogram and leukogram, and the measured of larger (LA) and minor axes (MA), surface (SF) and volume (VL) of red blood cell (RBC) were done. Data are presented as mean and coefficient of variation (CV %), the minimum and maximum values, and the occurrence (%). No mortality was observed in any experimental group. In the present study the piracanjuba presented the highest means of hematocrit (Ht), RBC and mean corpuscular volume (MCV) in comparison to the other species. Piracanjuba also presented the higher value of Ht, hemoglobin (Hb) and MCV. However, Nile tilapia presented the minor mean and value of Ht, Hb, RBC and mean corpuscular volume (MCHC) when compared to the other three species. The Ht and RBC range data of piracanjuba do not match values from the other three species analyzed in the present study. The minimum and maximum range of RBC, Ht and Hb of Nile tilapia, jundiá and pacu are included in the same interval. The ranges of MCV and MCHC for the four species were in the same intermission period. Jundiá presented the highest CV of Ht, Hb and RBC, with higher amplitude of data of Ht and Hb. Pacu presented the lesser amplitude of data for Ht, Hb and MCV. In the present study all the fish species has showed WBC in a similar range. The jundiá and Nile tilapia were the species with the higher variety for white blood cell (WBC), neutrophils (NØ), lymphocyte (LØ), monocyte (MØ) and trombocyte (Trb). In the present study the LØ was the most common leukocyte observed in the studied species, followed by NØ, MØ and eosinophils (EØ). The jundiá was the unique specie that presented basophils (BØ). The Trb was the most common cell found in the studied species after RBC. The jundiá presented higher mean and value of Trb. Data of LA, MA, SF and VL from studied species in the present study are in the same range of variation. Some mistakes and lack of standards for analytical methods cause the comparison of results between authors and species very difficult. Despite some differences the pacu presented the higher values of LA, MA, SF and VL when compared to the other species studied. The erythrocyte is a common cell, but the cell size can vary in function of the large number of fish species. RBC size can varies inversely with whole animal metabolic activity. It was possible to observe that the piracanjuba presented higher hemoglobin concentration, and that it is not the species with larger RBC.