PREVALENCE AND PATHOGENIC POTENTIAL OF BACTERIA FROM DISCUS FISH (SYMPHYSODON SPP.)

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RESUMO

Bacterial diseases are one of the main threats to exported ornamental fish in the Amazon, and the One Health context is vital for understanding the prevalence and pathogenic potential of bacteria from fish of economic interest. By considering the association of these factors, researchers can develop practical strategies to mitigate bacterial diseases, promoting both aquatic animal welfare and human health. During 2018 and 2019, a total of 32 discus fish (*Simphysodon* spp.) with a history of mortality outbreaks were microbiologically examined. The strains were isolated from the brain and kidney in tryptic soy agar (incubated at 28°C/48h) and then identified through ribosomal proteins with a mass spectrometer (MALDI-ToF). Description of isolated bacteria was performed through prevalence estimation and pathogenicity ascertainment by Koch's Postulate. Because of pathogenicity potential, *Aeromonas hydrophila*, *Citrobacter freundii*, and *Edwarsiella tarda* were prospected for Koch's Postulate assay. The inoculum of each strain was standardized at approximately 10^8 colony-forming units/mL. For the experimental trial, 20 animals were randomly distributed in 4 aquariums (30 L), resulting in 5 fish exposed to each target-pathogen (inoculated intraperitoneally with 0.1 ml of the corresponding bacterial inoculum/fish), besides the control group (inoculated with 0.1 ml of sterile phosphate-buffered saline/fish). The inoculated fish were monitored for 21 days for behavioral changes, clinical signs, and mortality. All freshly dead fish were subjected to microbiological analysis to re-isolate the target pathogen in TSA (28°C/48h). From the 32 examined fish, the following bacteria were identified: *Aeromonas* spp. (9.38%), *Chromobacterium violaceum* (6.25%), *Chryseobacterium* sp. (9.38%), *Citrobacter freundii* (3.13%), *Edwardsiella tarda* (3.13%), *Enterobacter cloacae* (3.13%), *Enterobacter kobei* (3.13%), and *Pandoraea pnomenusa* (9.38%). Discus fish inoculated with *Aeromonas* spp. showed lethargy, melanosis, oral hemorrhage, loss of scales, cachexia, ocular opacity, and fin hemorrhage. *Aeromonas*-infected fish presented 100% mortality in less than 24 hours. Meanwhile, fish inoculated with *C. freundii* and *E. tarda* showed no behavioral changes, clinical signs, or mortality. In this study, *Aeromonas* spp. is highlighted as a highly prevalent bacterium in discus fish and for the first time, this important bacterium has been determined to be pathogenic for discus fish.

PALAVRAS-CHAVE: Disease, Koch's Postulate, Ornamental fish

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