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EFFECT OF RHODOPSEUDOMONAS PALUSTRIS BIOMASS ON SURVIVAL OF TAMBAQUI INFECTED WITH AEROMONAS JANDAEI

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RESUMO

This study evaluated the effects of *Rhodopseudomonas palustris* biomass supplementation (0, 0.5%, 1.5%, 3% and 6%) on survival of tambaqui *Colossoma macropomum* after 28 days of feeding. To produce the diet additive (bacterial biomass), the effluent from a fishery slaughterhouse (250L) was pasteurized (75ºC/30 min) and distributed in 10 bioreactors (25L/unit), for use as substract for bacteria growth (biomass production). The cultivation conditions included the incubation in bioreactors at room temperature, during 7 days, with light (100W/2700K). The condition also included the addition of 250mL (1%v/v) of *R. palustris* pre-inoculum (Amazon autochthonous strain MFRP01, previously cultivated in Pfennig broth at 34ºC/5 days/100W/2700K) in each bioreactor. The product was recovered by sampling the decanted biomass, which was freezed and lyophilized (-40º/72h). The resultant powder was incorporated into commercial fish feed according treatment, and then pelleted by feed mill. The pellets were dried (55ºC/24h) and storaged (-20°C). For experimental assay, tambaqui juveniles (n=600/±2g) were distributed in 20 tanks (500L) encompassing 5 treatments (levels of the additive, corresponding to grams of biomass per kilogram of fish feed): $T_{1(control)}$:0g/Kg; T_2:0.5g/Kg; T_3:1.5g/Kg; T_4:3g/Kg and T_5:6g/Kg). Fish were fed three times per day during 4 weeks until apparent satiety. After this period, seven fishes per tank were anesthetized (benzocaine 0.1g/L) and inoculated intraperitoneally with 0.1mL of *Aeromonas jandaei* (AM70 pathogenic strain, previously grown in TSB 28°C/48h), suspended in sterile PBS until reach 1.01nm/$OD_{600,}$ corresponding to 10^8CFU/mL. The results showed that diet consumption did not differ among treatments and fish fed with biomass at 0.5g/Kg (T_2) presented higher survival against *A. jandaei* infection ($p<0.05$) than control, indicating a potential immunostimulant response, triggered by supplementation. On the other hand, fish supplemented with the highest dose of additive (T_5) showed higher mortality than control, indicating a negative effect, probably due to overwhelm the immune system triggered by diet, leading to inflammation or immune suppression, making fish more susceptible to *Aeromonas*-infection. This study indicates the supplementation of *R. palustris* biomass at 0.5g/Kg (0.5%) during a short period (28 days) to strategically prevent tambaqui against *Aeromonas*-infection, which encourages the development of aquaculture in the One Health-context (fish:environment:consumers). Funding source: Biodiversa/Fapeam(01.02.016301.03247/2021-54), Universal/CNPq (Processo nº422010/2021-9),

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PALAVRAS-CHAVE: Immune responses, bacterial challenge, additive

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