



## EFFICACY OF INJECTABLE VACCINE AGAINST FLAVOBACTERIUM OREOCHROMIS IN TAMBAQUI COLOSSOMA MACROPOMUM

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### RESUMO

Flavobacteriosis, an infectious disease caused by *Flavobacterium* spp., has had adverse effects on farmed tambaqui (*Colossoma macropomum*). Vaccines are considered elective to prevent highly virulent bacterial diseases and have been developed in different methods to induce immune response and show high efficacy against *Flavobacterium* infection. In this context, the aim of this study was to determine the efficacy of a vaccine delivery through injection for tambaqui against *Flavobacterium oreochromis*. For synthesis of the vaccine, a pathogenic strain (genetic group with the highest prevalence: non-published data) was reactivated in G agar (28°C/48h), and then, colonies were transferred to G broth (28°C/24h/140rpm). Finally, the inoculum concentration was ascertained as 10<sup>9</sup> CFU/mL and then, inactivated with formalin 1% and stored (4°C). For the experimental assay, 88 tambaquis (±36.25 g) were distributed in 12 experimental unities (11 fish per aquarium of 30 L). Fish were maintained in a closed system, with constant aeration flow and partial water renewal daily (80%). The experimental unities were divided in 2 treatments (4 replicates): non-vaccinated and vaccinated groups. Non-vaccinated fish were inoculated intraperitoneally with fixed dose of 0.2 mL (sterile PBS + adjuvant Montanide™ ISA 763 B VG, 1:1 v/v). While vaccinated fish were inoculated intraperitoneally with a fixed dose of 0.2 mL (bacterin + adjuvant Montanide™ ISA 763 B VG, 1:1 v/v). A month after immunization, fish were challenged with *F. oreochromis* (homologous strain). The inoculum was ascertained at 1.75 x 10<sup>7</sup> CFU/ mL and administered intraperitoneally at 0.1 mL of pathogenic strain for each 10 g of live weight for fish from both treatments (vaccinated and non-vaccinated). After challenge, fish were monitored until reaches the mortality plateau (15 days). The vaccine was considered efficient if relative survival percentage (RSP) > 80%. The results showed efficacy of 100% of the vaccine prototype. While there was no mortality in vaccinated fish, the mortality of non-vaccinated fish was 87.5 ± 17.68%. The development of efficient fish vaccines are fundamental in the context of One Health, as they help prevent the spread of diseases in aquaculture, protecting fish and consequently, environment and human's health. This study provides a new vaccine prototype for administration through injection, 100% effective to protect tambaqui against a prevalent strain of *F. oreochromis* with a single dose of the immunogen, contributing to development of a sustainable and resilient aquaculture. Funding source: Amazônidas/Fapeam, INCT-Peixes-MCTIC/CNPq (Proc.405706/2022-7).

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