



I INTEGRATIVE INTERNACIONAL CONGRESS  
ON ANIMAL AND ENVIRONMENTAL HEALTH

## AUTOCHTHONOUS AND ALLOCHTHONOUS BACTERIA AS PROBIOTIC CANDIDATES AGAINST FLAVOBACTERIUM OREOCHROMIS IN MATRINXÃ LARVAE

I Integrative International Congress on Animal and Environmental Health, 1ª edição, de 25/06/2024 a 28/06/2024  
ISBN dos Anais: 978-65-5465-100-4

MEJIA; Karen Dayana Prada <sup>1</sup>, SILVA; Sarah Yasmin de Alcântara <sup>2</sup>, FERNANDES; Iana Elza Costa <sup>3</sup>, RODRIGUES; Roselene Nogueira <sup>4</sup>, CRUZ; Matheus Gomes da <sup>5</sup>, KOTZENT; Suzana <sup>6</sup>, PEREIRA; Elcimara Cardoso <sup>7</sup>, GALLANI; Sílvia Umeda <sup>8</sup>, PILARSKI; Fabiana <sup>9</sup>, VALLADÃO; Gustavo Moraes Ramos <sup>10</sup>

### RESUMO

Bacterial outbreaks represent a major concern economic loss in aquaculture. Fish larvae are the most susceptible to bacterial infections and the use of probiotics can be vital in managing these pathogens, balancing ecosystems, and promoting sustainable aquaculture. This work aimed to investigate the effect of two mix of autochthonous and one mix of allochthonous bacteria with probiotic potential as feed additives and determine their impact to enhance larvae resistance against flavobacteriosis in matrinxã *Brycon amazonicus*. First, 3200 matrinxã larvae (8.8 mg) were divided into independent tanks, provided with continuous aeration and 70% of water change daily. The four treatments were performed in four replicates, and basal-diet was commercial feed, supplemented with the following freeze-dried probiotics mixes (1:1:1): T<sub>1</sub>- *Bacillus pumilus*:*Lactobacillus plantarum*:*Lysinibacillus sphaericus*; T<sub>2</sub>- *B. cereus*:*B. megaterium*:*Lactococcus lactis*; T<sub>3</sub>- (strains from tambaqui *Colossoma macropomum*) *B. cereus*:*B. pumilus*:*B. subtilis*; T<sub>control</sub>- commercial feed without probiotics. The probiotics were included at proportion of 10 g per kilogram of feed. Then, larvae (20 fish/tank) were fed with the respective treatment, four times a day, for 39 days. At the end of the experiment, 20 fish/treatment were challenged by immersion against a *F. oreochromis* pathogenic strain at 2.6 x 10<sup>8</sup> CFU/mL of live bacteria. Fish were exposed for 12h, and then transferred to pathogen-free water and evaluated for disease resistance for 8 days. Fish with recent mortality were microbiologic examined to confirm diagnosis. The cumulative mortality data were analyzed using Kaplan-Meier. Infected larvae from T<sub>1</sub> and T<sub>control</sub> showed rapid progression of clinical signs and mortality (approx. 40% at the 1<sup>st</sup> day following the immersion challenge). At the end of the experiment, when mortalities reached a plateau, the statistical results indicated that the T<sub>3</sub> group showed a significantly higher survival rate (40%) compared to the control (15%) (p < 0.05). These results reveal that disease resistance against *F. oreochromis* was significantly improved by diet supplemented with mixed allochthonous probiotics (T<sub>3</sub>), originally obtained from tambaqui. The integration of probiotics in aquaculture represents a fundamental stride towards fostering the principles of One Health, and in this study is an holistic approach to mitigate the risk of disease outbreaks, reduce dependency on antibiotics, and promote sustainable aquaculture practices.

**PALAVRAS-CHAVE:** Bacterial resistance, *Brycon amazonicus*, Larviculture, Probiotic powers

<sup>1</sup> Universidade Nilton Lins, karen.pradamejia@yahoo.com

<sup>2</sup> Universidade Nilton Lins, yasmin.syas@gmail.com

<sup>3</sup> Universidade Nilton Lins, ianasuk19@outlook.com

<sup>4</sup> Universidade Nilton Lins, lilia-rodrigues2011@hotmail.com

<sup>5</sup> Universidade do Estado do Amazonas, matheusbiogc@hotmail.com

<sup>6</sup> Universidade Nilton Lins, su\_kotzent@hotmail.com

<sup>7</sup> Universidade Nilton Lins, elcimacardoso94@gmail.com

<sup>8</sup> Universidade Nilton Lins, silvia.gallani@uniniltonlins.edu.br

<sup>9</sup> Universidade Estadual Paulista "Júlio de Mesquita Filho", fabiana.pilarski@unesp.br

<sup>10</sup> Universidade Nilton Lins, gmrvaqua@gmail.com

<sup>1</sup> Universidade Nilton Lins, karen.pradamejia@yahoo.com  
<sup>2</sup> Universidade Nilton Lins, yasmin.syas@gmail.com  
<sup>3</sup> Universidade Nilton Lins, ianasuk19@outlook.com  
<sup>4</sup> Universidade Nilton Lins, lilia-rodrigues2011@hotmail.com  
<sup>5</sup> Universidade do Estado do Amazonas, matheusbiogc@hotmail.com  
<sup>6</sup> Universidade Nilton Lins, su\_kotzent@hotmail.com  
<sup>7</sup> Universidade Nilton Lins, elcimaracardoso94@gmail.com  
<sup>8</sup> Universidade Nilton Lins, silvia.gallani@uniniltonlins.edu.br  
<sup>9</sup> Universidade Estadual Paulista "Júlio de Mesquita Filho", fabiana.pllarski@unesp.br  
<sup>10</sup> Universidade Nilton Lins, gmrvaqua@gmail.com