

# USE OF STINGLESS BEES PROPOLIS AS FOOD ADDITIVE FOR JUVENILE TAMBAQUI (*COLOSSOMA MACROPOMUM*)

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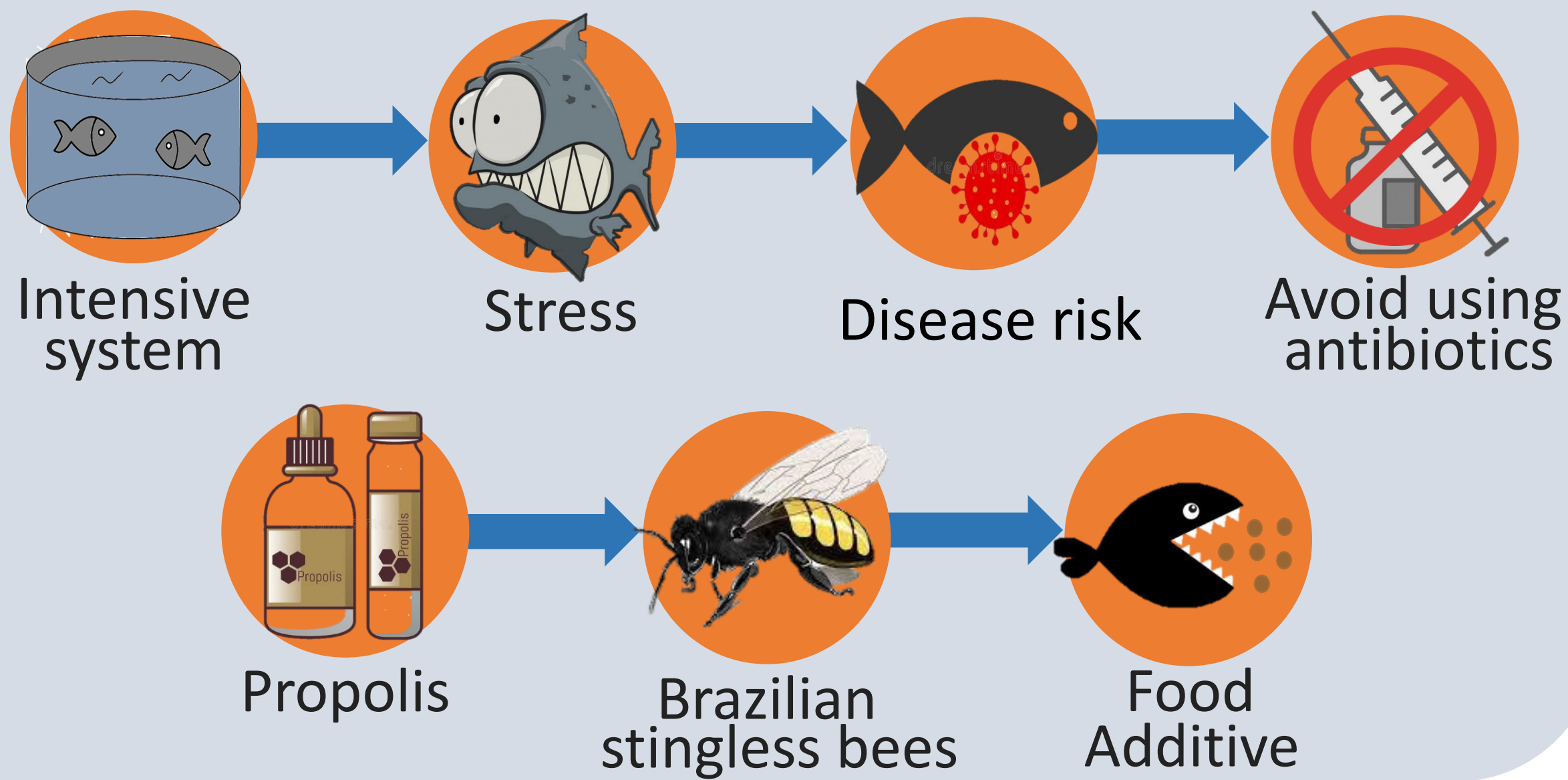


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## INTRODUCTION

Stressors from production systems affect immune system and make fish vulnerable to pathogens<sup>1</sup>. In this study, we focused on use of propolis from a Brazilian stingless bees as an alternative food additive due their most interesting composition in bioactive compounds when compared to those produced by *Apis*<sup>2</sup>.



## OBJETIVE

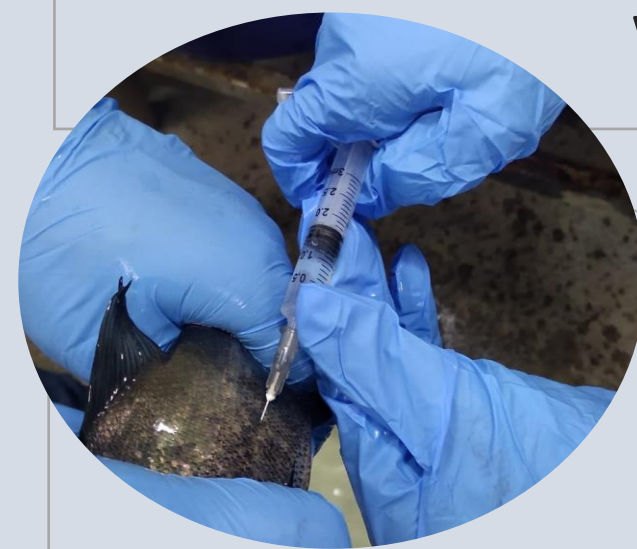
The aim of this study was evaluate use of stingless bees propolis as a food additive in juvenile tambaqui.

## METHODS



Were used 108 juveniles were randomly distributed in 12 boxes of 200 liter, with 9 fish per tank.

Propolis ethanolic extract (PEE) were obtained from propolis collected in hives of *Frieseomelitta sp* and added in commercial diet according to treatments, as follow: 0; 1.5%; and 3.0% of PEE, trial period was 30 days and fish were fed twice a day.



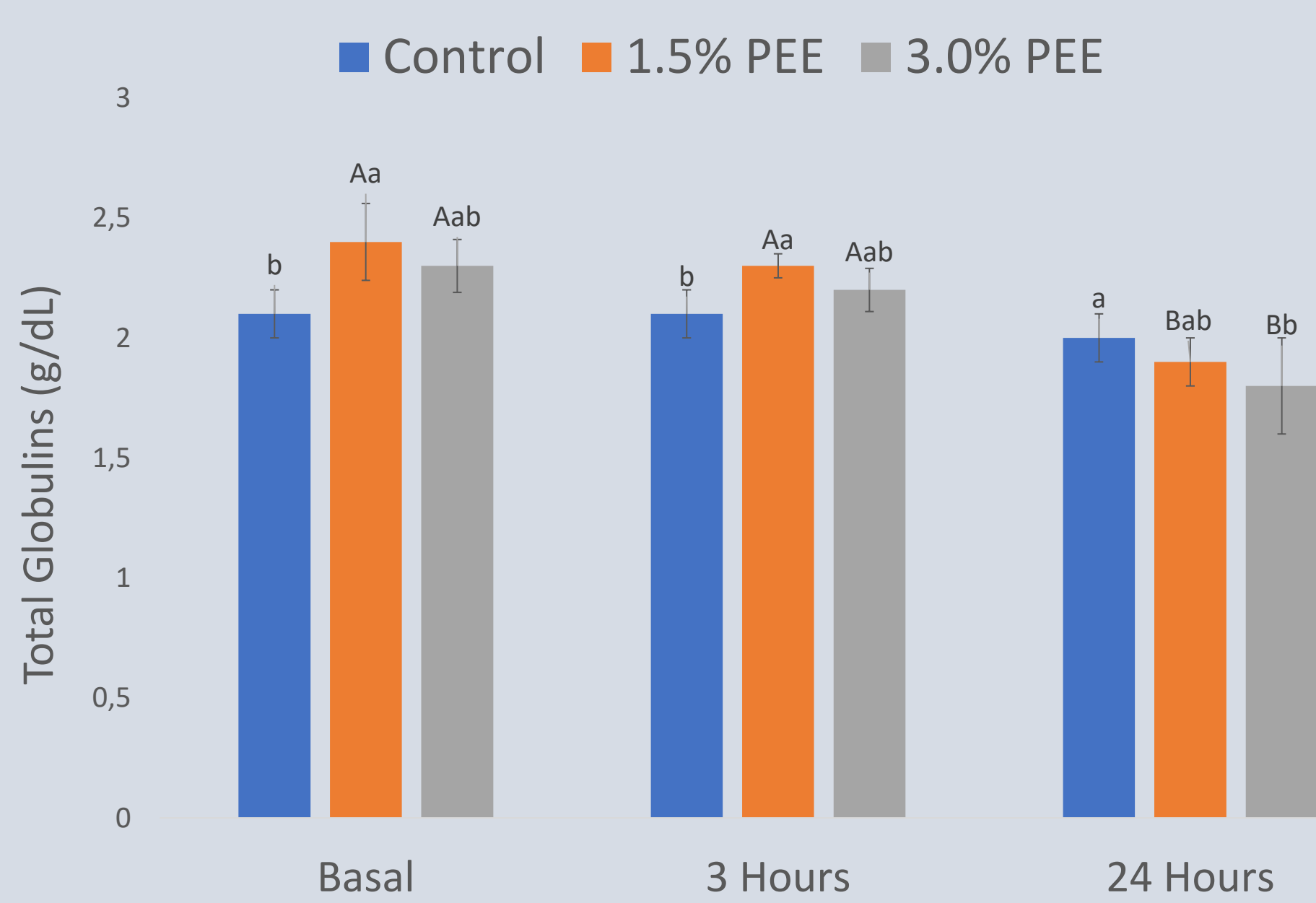
After this period, 3 fish from each box were sampled and anesthetized with benzocaine to draw blood and weighed. The rest were challenged with heat-killed *Aeromonas hydrophila* ( $10^8$  UFC mL<sup>-1</sup>), and than sampled at 3 and 24 hours after bacterial challenge.

The weight values were used in growth performance parameters and blood was used to determine globulins and leukocytes respiratory activity.

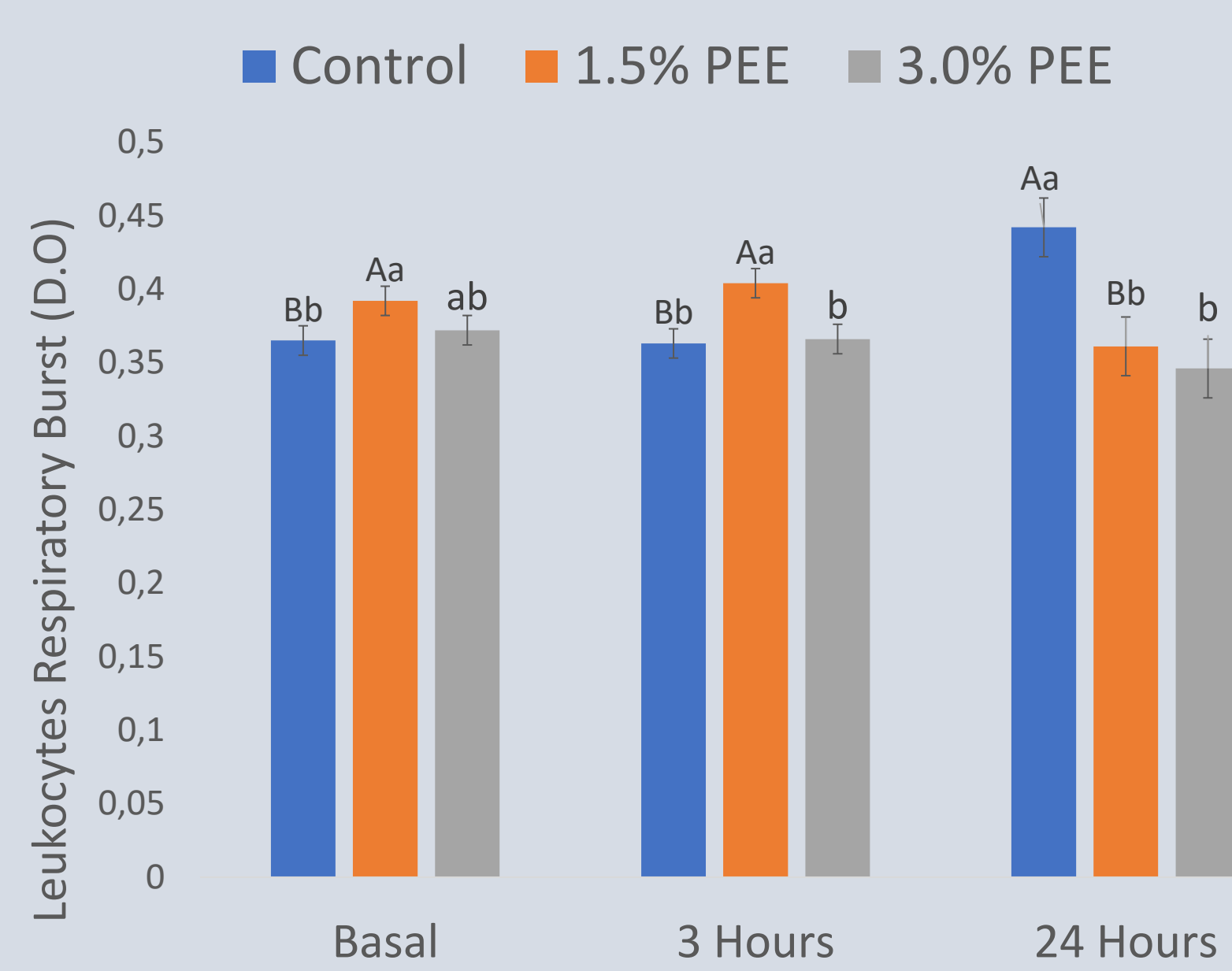


## RESULTS & DISCUSSION

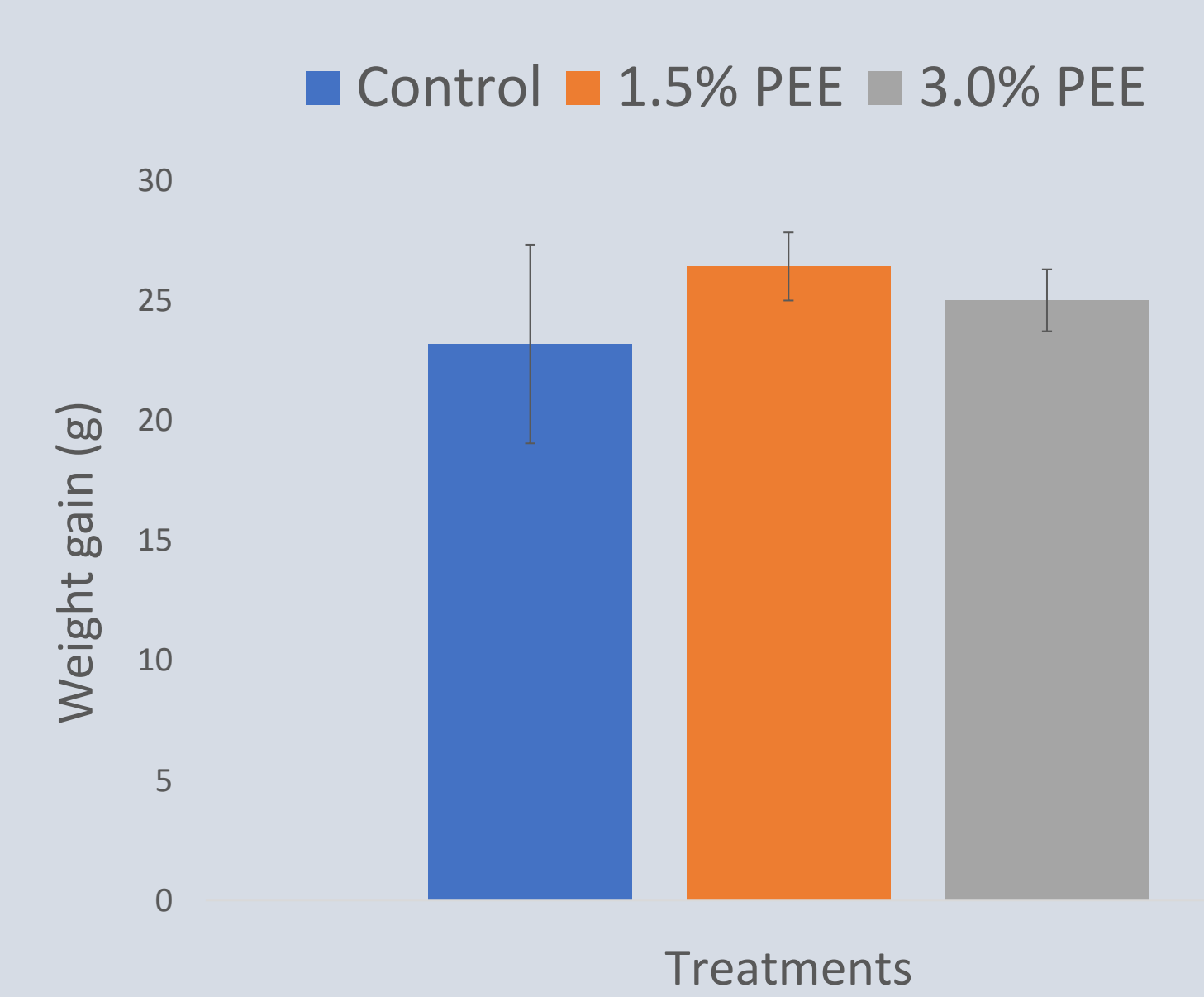
Innate and acquired immune system of tambaqui were stimulated by PEE. At basal collections and 3 hours after the bacterial challenge, total globulin and leukocyte respiratory activity were significantly higher in fish fed 1.5% PEE. And it could verify that the supplementation of PEE, in the tested concentrations, did not significantly affect the weight gain, however, both PEE treatments had lower coefficient of variation, when compared with the control treatment, which indicate greater uniformity of fish.



**Figure 1.** Total globulins in juveniles of tambaqui (*Colossoma macropomum*) fed with Propolis ethanolic extract (PEE), before and after bacterial challenge. Different letter indicates statistical difference by Tukey test ( $P < 0.05$ ).



**Figure 2.** Leukocytes Respiratory Burst in juveniles of tambaqui (*Colossoma macropomum*) fed with Propolis ethanolic extract (PEE), before and after bacterial challenge. Different letter indicates statistical difference by Tukey test ( $P < 0.05$ ).



**Figure 3.** Performance of juvenile of tambaqui (*Colossoma macropomum*) fed with different concentrations of Propolis ethanolic extract (PEE), at the end of 30 days.

## CONCLUSION

According to obtained results, the inclusion of 1.5% of PEE in the diet improved weight uniformity and promoted a better immune response for tambaqui.

## REFERENCES

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## ACKNOWLEDGMENTES:

