I-INTERNATIONAL MEETING OF ANIMAL SCIENCE IN SEMI-ARID REGIONS
Universidade Federal do Agreste de Pernambuco – UFAPE
July 03rd to 05th, 2024, Garanhuns-PE

Thematic area: Aquaculture

Body Composition of Tambaqui Juveniles Fed with Insect Meal

Carlos Henrique de Melo Silva*[1], Pedro Gomes Gamarano[2], Leandro Santos Costa[2], Felipe Guedes de Araújo[1]
[1]Universidade Federal do Agreste de Pernambuco, Garanhuns/Pernambuco, Brasil; [2]Universidade Federal de Minas Gerais, Belo Horizonte/Minas Gerais, Brasil. *carloshenriquemelo94@gmail.com

In recent years, the populational growth has increased the demand for food and intensified the pressure for sustainable production. In aquaculture, the long-term sustainability of fishmeal (FM) as major protein source in aquatic organisms feed formulation has been questioned. Its production poses ecological and economical challenges, as it often involves overfishing and can disrupt marine ecosystems and because fish meal is expensive and its price is volatile. Consequently, several studies have investigated alternative food sources to replace FM in fish diets. With that insects, such as *Tenebrio molitor* (mealworm) and black soldier fly (*Hermetia illucens*) larvae, due to their favorable amino acid composition and the ability to be produced from organic waste are being considered promising candidates. Diet formulation can significantly influence chemical composition and quality of fish edible tissues, impacting the nutritional value and physicochemical characteristics of fish meat, therefore it is important to evaluate the effects of alternative ingredients before recommending its use. With that perspective, this study aimed to evaluate the influence of using black soldier fly larva meal (BSM) as fish meal substitute on juvenile tambaqui body composition. 75 tambaqui (*Colossoma macropomum*) juveniles, with an initial average weight of 68.19 ± 0.49 g, were distributed in 15 100-liter tanks arranged in a water recirculation system. The fish were fed twice a day for 60 days. The experimental design was completely randomized and included five treatments with varying percentages of FM replacement by BSM: 0.0%, 12.5%, 25.0%, 35.7%, and 50%, with each treatment performed in triplicate. At the end of the experiment, the fish were anesthetized and subsequently euthanized for muscle tissue collection. Moisture and ether extract content were determined following the A.O.A.C (2016) methodology. The data underwent analysis of variance (ANOVA) and Tukey's test ($p < 0.05$) to identify significant differences. The results showed no statistically significant differences in moisture and ether extract content among the experimental diets ($p > 0.05$). This suggests that replacing fishmeal with BSM does not alter the muscle composition of tambaqui juveniles in terms of moisture and lipid content. Black soldier fly larval flour represents a viable alternative to fishmeal in the nutrition of juvenile tambaqui, with the potential to replace up to 50% of FM without compromising muscle quality. However, further studies are needed to evaluate performance parameters, intestinal health, and blood biochemistry to validate the use of this flour in tambaqui juvenile nutrition. Additionally, exploring the long-term impacts of this dietary substitution during different growth phases of tambaqui and its economic feasibility on a large scale would be interesting.
The experiment was conducted following the norms of the Ethics Committee on Animal Use (CEUA), protocol UFMG 31/2023.

Keywords: *Colossoma macropomum*, *Hermetia illucens*, nutrition, moisture, fishmeal.

Acknowledgments: This research was financially supported by CNPq.