

Enriching artemia and compound diets affects body shape and skin pigmentation of *Pseudoplatystoma punctifer* larvae

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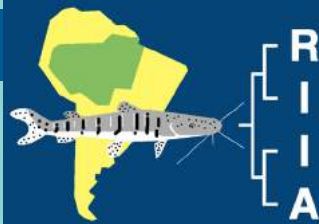
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The goal of this study was to analyze the nutritional effects on phenotypic plasticity during the larval development of *Pseudoplatystoma punctifer*. Larvae were fed artemia from 4 to 18 days post fertilization (dpf) and weaned onto inert diet from 15 to 29 dpf. A commercial enrichment was used to generate the following dietary treatments: control group (C), non-enriched artemia and inert diet; T1, enriched artemia and non-enriched inert diet; T2, non-enriched artemia and enriched inert diet; and T3, enriched artemia and inert diet. Phenotypic plasticity was analyzed in 26 day-old larvae at morphological and pigmentation levels. Sixteen landmarks were selected to provide a definition of the head morphology of the fish. Additionally, two angular measurements were evaluated in order to assess differences in eye symmetry and mouth shape: the vertebral-ocular angle (VO), which is defined as the angle formed by the vertebral column line and the axis that bisects both eyes, and the snout-barbels angle (SB), which is defined as the angle formed by the lines going from the central point of the snout to the base of each superior barbel. Texture analysis was performed in a pre-defined area of the head to evaluate pigmented skin aspect. Geometric morphometric results showed differences in head shape and symmetry between dietary treatments. VO and SB angles also differed, the VO angle of the C group being smaller than that of T3 group and the SB angle of the C group being bigger than the rest of the treatments (One-way ANOVA, $P < 0.05$). Image texture analysis also revealed a dietary effect on skin pigmentation between treatments. T groups showed a more uniform aspect of the skin, whereas the C group displayed a more heterogeneous aspect and patchiness pigmentation pattern. In conclusion, the present study showed that *P. punctifer* larval phenotype was nutritionally modulated, the effects being greater when the enrichment was offered during both the artemia and inert diet feeding windows.



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