

## **Specialized Feed Induced Growth, Nuchal Hump Development and Histological Changes in Flowerhorn (*Cichlosoma citrinella*)**

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### **Abstract**

Ornamental fish trade is a multibillion-dollar industry worldwide. One of the highly-demanded ornamental fish is the bumpy head flowerhorn (FH). In spite of its popularity, scientific studies on the FH nuchal hump (NH) development are considerably limited. This inferential study aimed to determine the growth, development, and NH histology of FH treated with conventional and specialized feeds for 17 weeks. Two groups consisting of 12 fish were randomly selected and regularly observed. Quantitative and qualitative data were subjected to T-test and histological analysis, respectively. Results showed a significant increase in body length of the treated group on the fourth – seventh weeks ( $p= 0.04-0.01$ ). Likewise, the significant increase in weight started in the third week ( $p= 0.03-0.001$ ) onwards. Nuchal humps' vertical and horizontal components significantly increased at seventh week ( $p= 0.04$ ) and fourteenth week ( $p=0.04$ ), respectively. Histological analysis revealed greater fat deposits under stratum compactum, thicker dermis ( $203.58 \mu\text{m}$ ), and bigger lateral line canal ( $84.4 \mu\text{m}$ ). This study demonstrated that the specialized feed significantly contributed to the growth, nuchal development, and increase fat deposits in flower horn. Results provide vital information on the biology of flowerhorn and fish industry. Further study on the histological changes of other organs is recommended.

**Keywords:** *flowerhorn fish, nuchal hump, feeds, histology*