

Histological assessments of intestinal immuno-morphology of tiger grouper juvenile, *Epinephelus fuscoguttatus*

ABSTRACT

Histological assessments on the intestinal morphology and immunity of tiger grouper juveniles, *Epinephelus fuscoguttatus* help in determining the earliest age to start an oral vaccination. This study describes the morphological development of the intestinal immunity of tiger grouper of various ages. Clinically healthy tiger groupers were selected and divided into 4 groups of 20 fish per group. Groups 1, 2, 3 and 4 consisted of juveniles of 30, 60, 90 and 120 days old, respectively. The whole intestine was collected and divided into three regions, the anterior, mid and posterior intestine and fixed in 10% buffered formalin before slides were prepared for microscopic examinations. It was found that the histological structures of the anterior intestine were for absorption of nutrient from digested food particles. The significantly ($p < 0.05$) higher number and length of the intestinal villi and smaller gap between villi were observed in the anterior intestine, which were structures for absorption. Structures of the posterior intestine were for immunity especially the adaptive immunity with included significantly ($p < 0.05$) higher numbers of the lymphoid and goblet cells, and significantly ($p < 0.05$) thicker lamina propria, which were structures for immunity. The mid intestine was the transition structure that involved in both absorption and innate immunity. The results also revealed that leukocytes existed in the lamina propria of 30-days old tiger groupers, an indication that the immune system was present at that particular age.

Keyword: Tiger grouper; Intestine histological; Assessment; Immune system