Abstract 18:

Impact of early-life rearing environment on gut microbiota succession, nutrient digestibility and energy balance of Nile tilapia in later life

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Gut microbial colonization of fish starts from the first-feeding when the yolk sac is almost consumed. The gut microbiota plays an important role in nutrient digestion, immune system development and pathogens resistance of fish larvae. The microbial colonization process was mainly influenced by the feed and environmental microbial community that the fish were contacted. However, the impact of early-life rearing environment on fish gut microbiota succession and performance in the later-life stages remains largely unexplored. In this study, two different rearing conditions, namely flow-through system (FTS) and biofloc system (BFS) were applied for Nile tilapia larvae culture (0 - 14 days post hatching (dph)). After that, fish were transferred to a common recirculating system and fed with the same feed (15 - 62 dph). A grow trail (63 – 104 dph) was performed in another recirculating system and fish were fed with two types of feed containing different levels of non-starch polysaccharides (NSP). The results showed that larvae cultured in FTS and BFS exhibited different gut microbiota composition and growth. The difference in gut microbiota was still detected at 62 dph even the fish were fed with same feed and cultured in the same system. However, the imprint of early-life microbial colonization was not shown at 104 dph, and no significant impact on nutrient digestions and energy balance was detected during the growth trail. Our study implied that host selection on gut microbiota overwhelmed the effect of early-life colonization with the growth of fish.