

Co-infections of Tilapia Lake Virus, *Aeromonas hydrophila* and *Streptococcus agalactiae* in farmed red hybrid tilapia

ABSTRACT

A high death rate among red hybrid tilapias was observed in a farm in Selangor, Malaysia, in January 2020. The affected fish appeared lethargic, isolated from schooling group, showed loss of appetite, red and haemorrhagic skin, exophthalmia and enlarged gall bladders. Histopathological assessment revealed deformation of kidney tubules, and severe congestion with infiltrations of inflammatory cells in the brains and kidneys. Syncytial cells and intracytoplasmic inclusion bodies were occasionally observed in the liver and brain sections. Tilapia Lake Virus (TiLV), *Aeromonas hydrophila* and *Streptococcus agalactiae* were identified in the affected fish, either through isolation or through PCR and sequencing analysis. The phylogenetic tree analysis revealed that the TiLV strain in this study was closely related to the previously reported Malaysian strain that was isolated in 2019. On the other hand, *A. hydrophila* and *S. agalactiae* were closer to Algerian and Brazilian strains, respectively. The multiple antibiotic resistance index for *A. hydrophila* and *S. agalactiae* was 0.50 and 0.25, respectively. Co-infections of virus and bacteria in cultured tilapia is a new threat for the tilapia industry.

Keyword: Co-infections; Tilapia Lake Virus; *Aeromonas hydrophila*; *Streptococcus agalactiae*; Tilapia