

Title: FIRST DESCRIPTION OF *Streptococcus agalactiae* AND *Francisella noatunensis subsp. orientalis* COINFECTION IN FARM-RAISED NILE TILAPIA (*Oreochromis niloticus*)

Authors Assis, G.B.N¹, Pimenta leibowitz¹, M, Figueiredo, H.C.P.^{1,2}, Leal, C.A.G.^{1,2}

Institution ¹AQUAVET/UFMG - Federal University of Minas Gerais (Av. Antonio Carlos 6627, Belo Horizonte-MG), ²AQUACEN/ National Official Reference Laboratory of Diagnostic of Aquatic Animal Diseases/ Ministry of Fisheries and Aquaculture (Av. Antonio Carlos 6627, Belo Horizonte-MG)

Abstract

Nile tilapia (*Oreochromis niloticus* L.) is the main aquatic species cultured in Brazil, as well as one of the world's leading farmed fish species. *S.agalactiae* (SA) and *F.noatunensis subsp.orientalis*(FNO) cause outbreaks in Nile tilapia farms worldwide; they are responsible for serious economic losses annually. These pathogens infect mainly finfish during the summer season and fingerlings/juveniles during the winter. Both bacteria have been associated with outbreaks in Brazilian farms. To the best of our knowledge, until now, there is no report of coinfections caused by these microorganisms in fish. The aim of this study was to determine the etiology of chronic mortalities in a cage farm of Nile tilapia in Minas Gerais State. In the autumn of 2015, three large cages of juveniles showing chronic mortalities were evaluated. Diseased fish presented melanosis, gasping, lethargy, exoftalmia, and erratic swimming behavior. A total of 52 diseased animals were sampled and submitted to bacteriological examinations. Samples of brain and kidney were aseptically collected and streaked onto 5% blood agar (BA). Similarly, samples of kidney and spleen were aseptically sampled and streaked onto a modified cysteine heart agar (CHA). The BA and CHA plates were incubated for 72 and 120 hours, respectively, at 28°C. Bacterial isolates were identified by MALDI-TOF technology using the equipment Microflex (BD/Bruker, USA). Production data and water quality parameters were also evaluated. From 52 diseased fish, 28 presented positive results for SA, one for FNO, and seven for both bacteria. This is the first report of a coinfection caused by SA and FNO in farm-raised Nile tilapia. High stocking densities and episodes of low dissolved oxygen may have created a stressful and an immunosuppressive condition that could have affected the fish. These factors may have contributed to the occurrence of infection by both pathogens, in an uncommon season for these illnesses.

Key-words: aquaculture, francisellosis, outbreak, streptococcosis

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