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Detection of the Presence of Beta Lactamase (Bla) Antibiotic-Resistant Gene in E. Coli from Cage-Cultured Tilapia (*Oreochromis Niloticus)* from Laguna De Bay, Philippines

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Abstract

Inland fish and fisheries play critical roles in ensuring global food security by providing a vital source of animal protein for developing-country communities. Laguna de Bay, the Philippines' largest inland freshwater system, is primarily used for aquaculture purposes. However, because of its proximity to domestic and industrial activities, it is vulnerable to pollution from human, animal, and industrial waste. The objectives of this study were to: (a) investigate the presence of *E. coli* from the skin mucus, gills, and gut of adult cage-cultured tilapia obtained from Laguna de Bay's Biñan and Pila stations, and (b) detect the presence of Bla (beta-lactamase) genes in *E. coli* isolated from fish samples. Tilapia were sampled at random for three months, from January to March 2018. Bacteria were isolated from skin mucus, gills, and the gut. All bacterial isolates were subjected to morphological and biochemical tests, and all were found to be positive for *E. coli*. Polymerase Chain Reaction (PCR) analyses revealed that none of the samples contained Bla gene. Nonetheless, the presence of *E. coli* in fish samples is recognized as a reliable indicator of fecal contamination and thus water pollution, and may pose a risk to consumers, so it could serve as a basis for further research.

Keywords: microbiology, E. coli, Bla gene, PCR analysis, Laguna de Bay, Philippines