

TITLE: SUSCEPTIBILITY PROFILE OF ANTIMICROBIALS AND HEAVY METALS BY ISOLATED BACTERIA OF FISH NURSERY WITH ORGANIC FERTILIZATION

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ABSTRACT:

The fish farming is a promising activity from an economic point of view in the world, and can be exploited in several ways, with emphasis on the semi-intensive system. In this system can be adopted organic fertilization of nurseries. The use of organic fertilizers is an economical way to improve the performance of fish, since as feces contained in fertilizer can increase the number of planktons that serve as natural food. However, one aspect that requires caution is whether fish are not serving as transmitters of bacteria, particularly multidrug resistant bacteria. In addition, animals have direct contact with river water that may be contaminated with industrial waste. Therefore, the objective of this work is to investigate the resistance profile to antimicrobials and heavy metals in nurseries submitted to organic fertilization. Two excavated nurseries, populated with Nile Tilapia (*Oreochromis niloticus*), were used, one fertilized with feces and the other without fertilization. From each nursery, eight samples of water and 20 fish samples were collected, of which 24 isolates of *Escherichia coli*, 18 of *Salmonella* spp. and eight of *Aeromonas hydrophila* were obtained. Bacteria were submitted to the susceptibility test for azithromycin, enrofloxacin, florfenicol, oxacillin, oxytetracycline and sulfazotrim, as well as heavy metals copper, manganese and zinc. For this purpose, the microdilution technique in broth was used, being determined the Minimum Bactericidal Concentration (CBM) of the substances. Of the isolates, 42.85% belong to the genus *Salmonella* and were obtained from the fertilized nursery with susceptibility to 2,000 µg / mL of azithromycin, while the unfertilized group was observed in only 9.1%. For the tests with metals, isolated from the fertilized treatment obtained CBM of 8,000 µg / mL for copper (28.6%) and manganese (42.85%). *E. coli* isolates from the fertilized nursery were more resistant to unfertilized nursery isolates when submitted to florfenicol at 1000 µg / mL (45.45%), oxytetracycline at 500 µg / mL and sulfazotrim at 415/83 µg / mL. *E. coli* and *Salmonella* spp. isolates from the fertilized nursery there were no susceptibility to the other antimicrobials and heavy metals. No antimicrobial or metal indicated the difference in susceptibility of *A. hydrophila* between the two treatments. Therefore, the values found suggest how feces can influence the susceptibility of *E. coli* and *Salmonella* spp. in fish nursery with organic fertilization.

Keywords: fish farming, *Oreochromis niloticus*, antibiotics, resistance