TITLE: INFLUENCE OF DIFFERENT SALINITY LEVELS IN BIOFILM FORMATION IN *Aeromonas* spp.

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ABSTRACT:

Bacteria of the genus *Aeromonas* are highly widespread pathogens in the aquatic environment, responsible for important economic loss in fish farming from several countries. This opportunistic microorganism may cause tissue necrosis and sepsis in immunosuppressed aquatic animals. The pathogenicity is linked to virulence factors, such as the formation of biofilm, which is protective structure formed by these bacteria. This pathogenicity is also related with the presence of a polar flagellum encoded by the *fla* gene, which plays an important role in bacterial adhesion of *Aeromonas*, favoring the formation of biofilm. These bacteria are constantly surrounded by a variety of stressful conditions, such as high salinity. In this way, the saline stress is one of the factors that favor the formation of these colonies and, consequently the persistence of the infections. Therefore, the aim of this study was to evaluate the profile of susceptibility of *Aeromonas* spp. isolates to sodium chloride (NaCl), as well as your ability to interfere with bacterial motility. In addition, to assess the ability of biofilm production of *Aeromonas* spp. isolates associated with different levels of salinity. A total of 6 samples of *Aeromonas* spp. obtained from tilapia (*Oreochromis niloticus*) were used. The antibacterial activity of NaCl in concentrations of 0 to 3% against the isolates was determined by the broth microdilution method. Motility assays were also performed on a semi-solid agar, only with bacteria that presented the *fla* gene (n = 2). In the same way, it was evaluated if the concentrations of 0 to 3% of NaCl interfered with the same. Finally, the ability of salinity to interfere with biofilm formation was verified by performing optical density reading on a microplate reader. To evidence the results, scanning electron microscopy was performed. Sodium chloride did not show antibacterial activity at the concentrations used, however, concentrations of 2 and 3% decreased the motility of the bacteria that presented the *fla* gene. In the formation of the biofilm, 83% of the bacterial isolates induced the production in the concentration of 0.25% of NaCl, according with the images of scanning electron microscopy. These results show that the different levels of NaCl influence the formation of biofilm favoring the persistence of infection in animals living in brackish water.

KEY WORDS: *fla* gene, motility, NaCl, fish farming

ACKNOWLEDGMENTS: Fundação de Amparo à Ciência e Tecnologia do Estado de Pernambuco (FACEPE)