

## PRODUCTION OF ANTIMICROBIAL SUBSTANCES BY *AEROMONAS* SP. STRAINS ISOLATED FROM FISH AND WATER SAMPLES.

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*Aeromonas* are Gram-negative rod shaped facultative anaerobe bacteria that can be found in aquatic environments, human intestinal tract and in some cold blooded animals. They are considered opportunistic pathogens for humans and their infections can be severe. They are generally pathogenic to fish and have economic implications. The occurrence of bacterial antibiotic resistance in strains isolated from the environment and from clinical samples has been reported in the literature and also by our group. This is cause for concern and highlights the need to prospect for new antimicrobial substances. In this study, we analyzed 78 *Aeromonas* strains, isolated from water and fish, sampled from two large bays (Guanabara and Sepetiba) and an urban lagoon (Rodrigo de Freitas) from Rio de Janeiro. We evaluated the production of antimicrobial substances by seeding the bacterial isolates in spots on Petri dishes. After incubation, the cells were killed with chloroform and the indicator strain pour plated. Incubations were all done at 30°C for 18 hours. Strains of different genera, representing the Gram-negative, Gram-positive and clinical strains were used as indicators. Evidence of antimicrobial substances was found in 39 strains. ERIC PCR was used to evaluate similarity among the producer strains. Antibiotic activity against important pathogens highly resistant to antibiotics including *Klebsiella pneumoniae* KPC, *Escherichia coli* ESBL, *Acinetobacter baumannii* and *Pseudomonas aeruginosa* SPM was detected. The chemical nature of the substances that caused these activities is being investigated. Preliminary analyses have shown that inhibition zones detected were resistant to neutralization with NaOH and to pronase treatment. The ERIC-PCR assays suggest that the ability to produce antimicrobial substances is present in a number of different strains. Two strains that presented a broad inhibition spectrum were chosen for DNA purification and genome sequencing. We expect the final outcome of this study to contribute to *Aeromonas* genomics and their antimicrobial potential.

**Keywords:** *Aeromonas*, nosocomial strains, antimicrobial substances.