

TITLE: BACTERIAL RESISTANCE TO ANTIMICROBIALS IN COASTAL AREAS INFLUENCED BY MARINE AQUACULTURE ACTIVITY IN NORTHEASTERN BRAZIL

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ABSTRACT:

Despite the growth of the activity of aquatic organism cultivation and its consequent economic importance, there is still no legislation regulating the use of antimicrobial substances in the intensive culture of marine shrimps. The management pattern of the animals in this activity promotes the inappropriate use of substances with an impact on environmental microbiota antimicrobial resistance patterns near the areas where these activities are concentrated. The general objective of this research was to monitor the resistance profiles between different bacterial genera isolated from estuarine waters influenced by the activity of marine shrimp (*Litopenaeus vannamei*). Water and sediment samples were collected in estuaries of the two leading states in the production of farmed shrimp: Ceará and Rio Grande do Norte. The number of total cultured heterotrophic bacteria (TCHB), total heterotrophic oxytetracycline-resistant bacteria (ORB) and florfenicol-resistant bacteria (FRB) was determined in each sample. Bacterial cultures were isolated from the growth on the culture media. After bacterial strains purification, it realized the antibiogram test using commercial antibiotic disks. Strains with multiple resistance profiles were submitted to the plasmid cure technique in order to establish the potential genetic origin of this trait. Bacterial counts revealed high numbers of BHOR and BHFR in water and sediment samples from the estuaries. Individually, the most expressed antimicrobial resistance profiles among the bacterial isolates were: Penicillin (56%), aztreonam (45%), Nalidixic Acid (39%), ampicillin (39%), oxytetracycline (33%), tetracycline (32%) e cephalothin (22%). Among the multiple resistance profiles, the most expressed was combined resistance to Nalidixic Acid and Aztreonam (52 strains). Three isolates showed resistance to up to nine antimicrobials tested. When submitted to the plasmid "cure" process using a mutagenic agent, 63.5% strains isolated from the Ceará estuaries presented resistance profiles of plasmid origin to some of the antimicrobial agents, while among the bacterial strains isolated from the estuaries of Rio Grande do North this percentage reached 79.4%. These results are indicative of the pressure exerted by the irresponsible use and disposal of antimicrobial substances in animal feed production activities.

Keywords: shrimp prawn, antibiotic, multiresistance, plasmids

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