

RESPONSE TO TETRACYCLINE TREATMENT ON CULTIVABLE MICROBIAL COMMUNITY FROM TRAMANDAÍ RIVER BASIN ESTUARY, RIO GRANDE DO SUL, BRAZIL.

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Abstract: Low toxicity, broad spectrum of action and low cost were the key attributes that led to increasing use of tetracycline class antibiotics since its discovery, in the 40's. Besides effectiveness in human and veterinary medicine, these drugs were also applied in agriculture and animal nutrition (act as growth promoters), a fact that appears to have greatly contributed to the dissemination of tetracycline resistant bacteria in various natural habitats. Estuaries are environments that connect rivers to oceans, are true biological reactors by confining the microbial load of different water bodies in a restricted space characterized by dynamism. The goal of this study was to evaluate "in vitro", the impact of tetracycline in microbial growth subsurface water samples from the estuary of the River Basin Tramandaí, an important system situated on the northern coast of Rio Grande do Sul. Four sampling points with different types of anthropogenic pressure were determined and the sampling was held in winter (August 2014) and summer (January 2015). Sterile glass bottles (1L) were used to obtain the samples, which were sent to the laboratory and processed within 24 hours. The total heterotrophic density was determined by direct counting on PCA agar, revealing countings between 2.4 and 4.4 log UFC.mL⁻¹ (summer and winter, respectively). Growth on PCA agar containing tetracycline (20 mg.L⁻¹) was tested after enrichment of the samples in nutrient broth (1: 1) without and supplemented with tetracycline (20 mg.L⁻¹). As a control, the microbial growth from the enrichment nutrient broth on PCA agar without antibiotic was also measured. The growth in both treatments and enrichment cultures PCA were at 30 ± 2 ° C for 24h. As expected for the growth in PCA + tetracycline, the samples that had already been exposed during the enrichment showed densities up to two times higher than those deprived of this treatment. However, the growth of tetracycline resistant bacteria even when this selective pressure was not induced suggests that these estuarine system communities are as a resistance reservoir because they have already been in contact with tetracycline or with allochthonous resistant bacteria.

Key-words: *antimicrobial resistance, tetracycline, anthropogenic pollution, estuary.*

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