

**TITLE:** RESISTANCE TO HEAVY METALS IN BACTERIA OF MEDICAL IMPORTANCE ISOLATED FROM AQUATIC ENVIRONMENTS IN BRAZIL

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**ABSTRACT:**

This article aims to discuss the resistance to heavy metals in medical important bacteria isolated from Brazilian aquatic environments, taking into account the isolation sites, the main heavy metals reported, the genes involved in the resistance, the genera and species and the main mechanisms of resistance present. This study is founded on a systematic literature review based upon specialized literature, through consultation of scientific articles, master's dissertations and doctoral thesis published and selected through search in the LILACS, SciELO and PubMed databases. After using the inclusion and exclusion criteria, five articles and a master's dissertation were selected to further analysis. Most of the publications (50%) were found in LILACS, with a higher prevalence for works carried out in the Southeast region (50%), and in freshwater environments (50%). Gram-negative bacteria were reported in all studies and the *Escherichia coli* species was the most prevalent in the founds (66.8%). Bacterial strains resistant to the following elements were also isolated: Cadmium (16.7%), Mercury (83.5%), Zinc (33.3%), Chromium (33.3%), Nickel (50%) and Silver (16.7%). The most prevalent resistance gene was *merA* (33.3%), the mercury reductase enzyme responsible for the conversion of the mercuric ion to volatile metallic mercury. It was found that future studies on resistance to heavy metals in other aquatic environments still need to be carried out in Brazil, especially the ones focusing in environments that receive effluents from industries, hospitals, sewers, etc., due to the importance given to sanitary medical issues related to contaminated disposal effluents by heavy metals used to daily life and the correlation between resistance to heavy metals and antimicrobials in aquatic bacteria.

**KEYWORDS:** MERCURY, RESISTENT, WATER.