

TITLE: ISOLATION OF NONTUBERCULOSIS MYCOBACTERIA AND OTHER BACTERIAS FROM BOTTLED MINERAL WATER

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ABSTRACT:

Excepting *Mycobacterium tuberculosis* Complex and *Mycobacterium leprae*, the other species of *Mycobacterium* genus are collectively referred to as nontuberculous mycobacteria (NTM). Several studies worldwide have shown high potential of NTM as emerging pathogens of lung diseases in healthy individuals and chronic or immunosuppressed patients. Nevertheless the epidemiology of these bacteria remains unknown, making difficult to assess the impact of infections. Thus, a possible causal relationship of the frequent and repeated exposure to environmental sources, mainly to water, is considered as the main factor for the emerging pattern of these pathologies. The present study aimed to investigate the occurrence and diversity of NTM in bottled mineral water (BMW) as well as to analyze the presence of other bacterias that also affect their potability. A total of seventy-one samples of BMW, commercialized in the city of Rio de Janeiro, were examined for the presence of NTM and other opportunistic pathogens, including those described in National Sanitary Surveillance Agency RDC 275/05 Decree. The samples were processed by membrane filtration culture technique and the identification of isolates was performed by *hsp65/rpoB* sequencing for NTM, and MALDI-TOF for other microorganisms. Twenty-one NTM species were detected in thirty-six samples (50.7%) of BMW. Thereby, this study reports species of clinical relevance for the first time in Brazil (*M. phocaicum*, *M. conceptionense* and *M. iranicum*) and other rarely isolated in the world (*M. murale*, *M. pallens*, *M. paragordoniae* and *M. petroleophilum*). Moreover, were also isolated *M. massiliense*, *M. fortuitum* and *M. chelonae*, the most prevalent species related to a largest mycobacterial outbreak ever occurred in Brazil. Other bacterias were identified by MALDI-TOF as *Acinetobacter baumannii*, *Burkholderia cepacia*, *Ralstonia pickettii* and *Serratia marcescens*, microorganisms that are commonly associated with multidrug resistance, besides *Escherichia coli*, *Enterobacter cloacae*, *Enterococcus casseliflavus* and *Pseudomonas aeruginosa*, indicating that ten samples (14.1%) of BMW were in disagreement with the RDC 275/05. Hence, in terms of public health, the presence of NTM and other pathogens in BMW may represent a potential risk for human health, especially for vulnerable people such as children, elderly and immunocompromised individuals.

Keywords: Nontuberculous mycobacteria, mineral water, potability

Development Agency: FAPERJ – Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro