

Title: DETECTION OF MYCOBACTERIAL INFECTION IN NON-HUMAN PRIMATES USING THE XPERT MTB/RIF MOLECULAR ASSAY

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Abstract:

Tuberculosis (TB) is a widespread infectious disease caused mainly by *Mycobacterium tuberculosis*. According to the World Health Organization, TB causes 1.5 million deaths every year. TB is also classified as a zoonosis, and can affect domestic and wildlife animals, such as non-human primates (NHP). Although *Mycobacterium tuberculosis* is the most common causative agent, other species such as *M. bovis* and *M. africanum* have been implicated as causes of TB in NHP. Despite the efforts to reduce the incidence of the disease in animals, TB outbreaks continue to occur in zoos, primate rehabilitation centers and research institutions. This is a considerable issue, since the infection generates economic problems due to loss of animals, interference with ongoing research projects, and costs with disease control measures within the colonies and also among the exposed workers. As part of ongoing efforts to avoid and control TB contamination in the Fundação Oswaldo Cruz animal facility, we evaluated two animals (*Saimiri sciureus*) that presented cutaneous lesions at the submandibular region. Submandibular lavages were collected to perform microscopy, molecular and culture assays to detect mycobacteria. Acid-fast bacilli were detected and PCR for the insertion sequence *IS6110* was also positive for both animals. Owing to these results, animals were euthanized and various samples were collected for further testing. In addition, oral swabs from twelve contactants were also studied. Nine oral swabs tested positive for mycobacteria and rifampicin resistance in the Xpert MTB/RIF test, one of them belonging to the first index case. Spleen and lymph node swabs of the first index case and lymph node swabs of the second index case were also positive, with rifampicin resistance. Swab samples of spleen and kidneys from the second index case and an oral swab from one of the contactants were positive for mycobacteria but 'undetermined' for rifampicin resistance. Additional analyses are in progress and will reveal the extent of infection in these animals. TB is a major public health concern in Brazil but current legislation lacks information regarding control strategies for laboratory animals. Additionally, the lack of a reliable screening test to identify latent TB infection in NHP needs to be addressed. In summary, our findings highlight the importance of TB monitoring and control measures in animal facilities and provide a framework for the evaluation of TB contamination in other NHP colonies.

Keywords: *Mycobacterium tuberculosis*, tuberculosis, non-human primates, Xpert MTB/RIF

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