EXPERIENCE ON THE USE OF NITRATE REDUCTASE ASSAY FOR SIMULTANEOUS DETECTION AND IDENTIFICATION OF *Mycobacterium tuberculosis* FROM PULMONARY SPECIMENS

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Tuberculosis (TB) is an infectious disease, mainly regarding HIV/AIDS coinfection, that corroborate to TB burden worldwide. Disease mainly caused by *Mycobacterium tuberculosis,* a slow growing bacteria that strongly metabolize nitrate to nitrite in contrast to cattle strains of *Mycobacterium bovis,* another potential causative agent of TB, or Bacillus Calmette-Guérin (BCG). The slow growing of the bacillus turns difficult a TB rapid diagnosis, thus, new tools are necessary for fast growth detection, identification and determination of susceptibility profile of the isolate. Rapid TB diagnostic and drug susceptibility tests contribute toward appropriate TB treatment and decrease the emergence of resistant strains. In this sense, the present study reports an experience in the use of assays based on the detection of nitrate reductase activity in nitrate added broth and solid medium to optimize simultaneously the detection and identification of *M. tuberculosis* from pulmonary specimens in a routine laboratory. Fifty-five sputa samples were decontaminated and seeded in media with nitrate (Middlebrook7H9-N, Ogawa Kudoh-N) and without nitrate (Middlebrook7H9, OK). The sensitivity and specificity of the assays were evaluated using Mycobacteria Growth Indicator Tube (MGIT) as reference method. The 7H9-N and OK-N assays showed better performance in detecting *M. tuberculosis* than the conventional assays (7H9 and OK). The performance of the broth media, 7H9-N, was comparable to MGIT, which made us optimistic about its use. The laboratorial experience in adding sodium nitrate to the culture media for TB laboratorial diagnosis showed to be an inexpensive and fast alternative for detecting *M. tuberculosis* growth and conducting simultaneous biochemical identification mainly in low-source setting laboratories.

Keywords: *Mycobacterium tuberculosis,* nitrate reductase assay, pulmonary specimens.