Characterization of Antibiotic Combinations Against *Mycobacterium abscessus* Using Growth and Viability Assays

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Keywords: *Mycobacterium abscessus*, resazurin microtiter assay, antibiotic combinations, checkerboard assay, colony-forming unit enumeration

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Published: 03/25/2025
https://doi.org/10.26443/msurj.v21i2.503

The *Mycobacterium abscessus* complex is a rapidly growing group of non-tuberculous mycobacteria associated with severe pulmonary infections and intrinsic antibiotic resistance, limiting treatment options for affected patients. Thus, to maximize efficacy, combination therapy is commonly used in the clinical management of *M. abscessus* pulmonary exacerbations. However, the interactions between antibiotics are not fully characterized at the experimental level. This study evaluates the activity of selected ribosome-targeting antibiotics alone and in combination against *M. abscessus* smooth and rough morphotypes, with the hypothesis that certain combinations demonstrate enhanced activity relative to single agents. Single-drug and combination effects were first assessed using a resazurin microtiter assay (REMA). Linezolid was tested in combination with multiple macrolides with different spectra of activity against *M. abscessus*, including josamycin, tylosin tartrate, and clarithromycin. Among these combinations, only linezolid combined with clarithromycin demonstrated enhanced inhibitory activity in the *M. abscessus* smooth reference strain. To further characterize this interaction, duplicate checkerboard assays were performed, followed by colony-forming unit (CFU) enumeration to distinguish between growth inhibition and reduction in viable bacteria (cidality of the combination). Ongoing work includes extending combination testing to the rough morphotype to determine whether the observed interaction is strain-dependent. Together, these experiments aim to better define antibiotic interactions against *M. abscessus* and clarify the nature of the linezolid-clarithromycin effect.