

# Overcoming Mycobacterium Tuberculosis Drug Resistance: Novel Medications and Repositioning Strategies

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## Abstract

Mycobacterium tuberculosis is a bacterium that causes tuberculosis, a disease that affects millions of people worldwide. This bacterium is considered a formidable multidrug-resistant pathogen due to its ability to resist numerous antibiotics. The development of Mycobacterium drug resistance is attributed to both innate and acquired mechanisms. Previously, rifampin was thought to be an effective medication for treating tuberculosis infections, but bacteria quickly developed resistance to it. This highlighted the urgent need for new medications to combat this bacterium. Fortunately, numerous other medications were already on the market that had not been previously considered for treating tuberculosis infections. Furthermore, researchers have proposed several novel medications that are currently undergoing clinical studies. To improve the efficacy of these drugs' mode of action, it is suggested that researchers focus on identifying unique target sites in the bacterium during the drug development process. This approach can help overcome the challenges posed by Mycobacterium drug resistance. In this review article, much of the focus is placed on the features of novel drug resistance exacerbated in Mycobacterium tuberculosis. Additionally, potential medications that are being repositioned or developed from novel sources are also discussed. The ultimate goal of this research is to find effective treatments for tuberculosis that can overcome the challenges posed by Mycobacterium drug resistance

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