

Pharmacological Management of Tuberculosis, Challenges, and Potential Strategies

ABSTRACT

Tuberculosis (TB) is an infection caused by the pathogen *Mycobacterium tuberculosis*. The disease causes around 2 million deaths worldwide, and incidences of drug resistance only makes increases the number. The most vulnerable victims of TB infections are children and human immunodeficiency virus (HIV) patients. TB and HIV co-infections can be deadly in AIDS sufferers, as the immune system is not able to combat TB infections, hence worsening the infection. Common drugs to treat TB are available in the market, first-line drugs such as isoniazid and rifamycin are broad-spectrum drugs. Second-line antibiotics such as fluoroquinolones are also available. In this review, the mechanisms of action of TB drugs are briefly discussed, as wells as the respective resistant mechanisms of *M. tuberculosis* against these drugs. An updated treatment regime for TB management using bedaquiline, pretomanid and linezolid was also discussed, which shows 90% therapeutic efficacy against highly drug-resistant tuberculosis cases. Furthermore, novel strategies such as nanoparticle-conjugated TB drugs can improve drug delivery, TB drug efficiency while reducing side effects. However, importance on patient compliance to the treatment regime is still the most crucial part of TB management, hence initiatives can be put to improve patient awareness and education.