

Antibiotic could be repurposed and added to tuberculosis treatment arsenal

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Research has found fidaxomicin, an antibiotic usually used to treat bowel infections, prevents growth of resistant strains of Mycobacterium tuberculosis (MTb) in the lab.

Published in the *Journal of Medical Microbiology*, the research found that fidaxomicin was more effective than existing tuberculosis (TB) medication at preventing growth of the bacterium that causes TB.

Researchers compared the activity of fidaxomicin and [rifampicin](#), an antibiotic currently used to treat TB, against 72 different strains of MTb. Of these strains, 34 were resistant to multiple [antibiotics](#). They found that fidaxomicin could prevent growth of all 72 strains at lower doses than rifampicin.

Both of the drugs tested work in a similar way and are in a group of antibiotics are known as RNAP inhibitors. These antibiotics target an enzyme called RNA polymerase, blocking it and preventing M. tuberculosis cells from reproducing.

Fidaxomicin is commonly used to treat Clostridium difficile (C. diff) infections. This is a bacterial

infection of the bowel which usually causes diarrhea. The researchers suggest that the antibiotic would need to be modified before use, to treat TB in vivo, as the [drug](#) in its current form targets the gastrointestinal tract instead of the lungs.

Rifampicin is a well-known frontline treatment for TB. There is increasing concern that antimicrobial resistance is becoming more common in MTb, with many strains resistant to several antibiotics. Over 90% of [strains](#) of multi-drug resistant MTb cannot be treated using rifampicin. Finding and developing affordable new antibiotics to treat MDR-TB is desperately needed.

An estimated 1.4 million people died of TB in 2019, and 10 million become unwell with the disease, including 1.2 million children. Very few antibiotics are effective against MTb, and as the bacteria become resistant to more and more antibiotics, TB is becoming harder and harder to treat.

The researchers hope to investigate the in vivo effects of fidaxomicin against TB using animal models.

More information: Qing Sun et al, Fidaxomicin has high in vitro activity against Mycobacterium tuberculosis, *Journal of Medical Microbiology* (2021). [DOI: 10.1099/jmm.0.001324](https://doi.org/10.1099/jmm.0.001324)

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