

Singapore discovers novel therapy to counter antibiotic-resistant lung infections

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Combination of rifaximin and clarithromycin is promising to effectively treat lung-related infections caused by non-tuberculous mycobacterium

Researchers from the Antimicrobial Resistance (AMR) Interdisciplinary Research Group (IRG) at Singapore-MIT Alliance for Research and Technology (SMART), MIT's research enterprise in Singapore, in collaboration with Nanyang Technological University Singapore (NTU Singapore) and National University Hospital (NUH), have discovered a novel therapy by combining two antibiotics, rifaximin and clarithromycin, to treat *Mycobacterium abscessus* (*M. abscessus*), a non-tuberculous mycobacterium (NTM) that causes chronic lung-related infections.

Infections caused by NTM are a fast-growing health concern worldwide, particularly in the context of lung-related infections. Among NTMs, *M. abscessus* is one of the most prevalent, causing pulmonary infections in humans with immune deficiencies or underlying lung conditions.

With clarithromycin being the mainstay of NTM treatments and currently the only highly effective oral antibiotic for treating *M. abscessus* infections, there is an urgent medical need for the identification of compounds that are clarithromycin potentiators in order to effectively restore clarithromycin efficacy against *M. abscessus*.

As a result, scientists are now furthering their research with animal preclinical studies to prepare for human clinical trials. As both rifaximin and clarithromycin are approved by the US Food and Drug Administration, the preclinical studies evaluating their combination against *M. abscessus* can be accelerated. The team is also collaborating with a commercial manufacturing partner to create inhalation formulations suitable for delivering the drug combination directly to the lungs for use in human clinical trials.