

Boost in quest for TB breath test

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A simple breath test may one day show whether someone has a strain of tuberculosis that will respond to a frontline antibiotic, or a drug-resistant type, scientists said Tuesday.

Building on previous work for a fast-track breath test, their new prototype technique looks for traces of [nitrogen gas](#) emitted by the disease-causing germ *Mycobacterium tuberculosis*.

Strains of the microbe which respond to the drug isoniazid have an enzyme called KatG that reacts to the antibiotic by releasing nitrogen.

The test entails administering a small amount of isoniazid, waiting for five to 10 minutes and then taking a breath sample, which is chemically analysed by a mass spectrometer.

A positive result—showing the presence of nitrogen—indicates the person has a TB infection that can be safely tackled with isoniazid, one of two frontline tuberculosis treatments.

The new technique has so far been tested on a small group of rabbits and clinical trials are needed to see if it is safe and accurate in humans—in which case it could be packaged as a portable diagnostic kit, the inventors hope.

The prototype will need refinement or be combined with other diagnostics to give physicians a broader view of a patient's TB status.

If it gives a negative result, this means that either a person does not have TB or has an isoniazid-resistant strain, said researchers.

Multi-drug resistant versions of the virus, often deadly, have to be treated with more expensive, alternative medicines that take longer to work and can have strong side-effects.

The research, reported in the journal *Nature Communications*, was led by Graham Timmins at the University of New Mexico at Albuquerque.

TB claimed 1.3 million lives worldwide last year, making it the deadliest disease after AIDS to be caused by a single infectious agent, the UN's World Health Organisation WHO reported in July.

Conventional sputum lab testing for TB bacteria can take up to six weeks, which is why the search is on for faster, on-the-spot diagnostics.

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