

Antibiotic is revived with new powers

Oliver Moody

A new incarnation of a 60-year-old antibiotic could become an "irresistible" ally in the fight against superbugs.

Doctors are increasingly troubled by the way some strains of infectious bacteria have evolved to withstand most common antibiotics. One of the treatments that is losing its edge is vancomycin, which has been one of the main tools against microbes such as MRSA and *C. difficile* since the Fifties.

While many scientists have been scrambling to discover new antibiotics, Dale Boger and his colleagues at the Scripps Research Institute in La Jolla, California, have been tinkering with the old compound's structure in an attempt to give it more anti-bacterial weapons.

Vancomycin works by depriving its targets of a molecule known as D-Ala-D-Ala, which bacteria require in order to knit their cell walls together. In recent years some bacteria have adapted and started substituting in a second molecule, D-Ala-D-Lac, which eludes the antibiotic's clutches. The improved drug not only wipes out this line of resistance, but incorporates two other angles of attack, making it effectively impossible for the bacteria to outsmart it.

Findings published in the journal *PNAS* show that the new drug is at least 200 times more potent against *Enterococcus* strains that were previously resistant to the antibiotic. "Doctors could use this modified form of vancomycin without fear of resistance emerging," Professor Boger said.

One drawback is that the tweaked vancomycin has yet to be tested on infected animals, let alone on people. Its manufacture must also be accelerated if it is to be made in useful quantities.

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