**Scientists 'supercharge' antibiotics to tear superbugs apart: Study hailed as groundbreaking amid race to combat drug resistance**

* **Scientists have found a way to 'supercharge' antibiotics to 'blow up' superbugs**
* **The drugs bind to bacteria to kill them - like putting a key in the lock of a door**
* **But when one drug exerts such physical force, it can 'rip the door off its hinges'**
* **Researchers hope this is a way to combat the growing antibiotic resistance crisis**

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Scientists have discovered a way to supercharge antibiotics to 'blow up' superbugs.

Researchers have found that using a specific drug with enough force has the power to tear bacteria apart, thereby killing them.

Normally, antibiotics bind to bacteria cells in order to destroy them - like putting a key in the lock of a door.

When bacteria become resistant to a drug, it's as if the lock has been changed so the key no longer fits.

But researchers found that one drug exerted such physical force on the bacteria that it 'tore the door off its hinges'.

The study, conducted at the University College London, looked at vancomycin, a powerful antibiotic used as a last resort treatment for MRSA, and oritavancin, a modified version of vancomycin used against complex skin infections.

Researchers found that oritavancin pressed into resistant bacteria with a force 11,000 times stronger than vancomycin, despite having the same 'keys'.

Oritavancin can kill bacteria within 15 minutes as opposed to vancomycin which takes between six to 24 hours.

Lead author Dr Joseph Ndieyira of the University College London said: 'Some of the antibiotics were so strong they tore the door off its hinges, killing the bacteria instantly.

'Our study suggests that the forces oritavancin generates can actually tear holes in the bacteria and rip them apart.

'Our findings will help us not only to design new antibiotics but also to modify existing ones to overcome resistance.'

He explained that oritavancin molecules stick together very well and form clusters, which dig into the surface of the bacteria, tearing it apart and killing it.

The researchers also found that conditions at the bacterial surface encourage clustering, which in turn makes the antibiotics more effective.

Scientists are currently searching for other antibiotics with similar properties to create a 'new generation' of drugs capable of defeating even the most resistant superbugs.

The growing crisis of antibiotic resistance, where bacteria change in a way that reduces the effectiveness of antibiotics, has had the health community on edge.

The Centers for Disease Control and Prevention called antibiotic resistance one of the most pressing public health threats of our time, while a UN summit last year stated it was on par with the spread of Ebola and HIV.

The growth of antibiotic resistance has been driven by several factors including the over-prescription of drugs for viruses, (which are not a bacterium and therefore ineffective in treatment), incorrect prescriptions and doses, and the drugs' use in agriculture.

Antibiotics have been used to promote the growth of livestock animals.

Reports have emerged of bacteria resistant to even the 'last resort' antibiotics, such as colistin, and even superbugs releasing decoy molecules allowing them to escape being killed by drugs.

This has forced scientists to either create new antibiotics or to find a way for existing ones to still be effective

A study, conducted last year at the University of Texas Southwestern Medical Center, found that blinding superbugs using a GM drug, so they could not find the places where they would normally stick to the host's body, proved more effective than killing them.

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