New antibiotics could kill off deadly superbugs in minutes

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New super-strength antibiotics could be developed to kill drug-resistant bacteria in minutes, a study has found.

Modifying existing antibiotics could make them much more powerful and able to rip apart germ cells to stop infections in their tracks, said scientists.

Until now most antibiotics can take up to a day to be effective. But modified super strength antibiotics could do this in an instant and boost the battle against superbugs such as MRSA. Few new antibiotics have been developed in the last two decades while drug-resistant bugs have become a major problem.

By 2050 it is predicted more people will die from untreatable infections than cancer. But scientists from University College London believe these strains could be killed if drugs are able to 'push' hard enough into bacteria. Dr Joseph Ndieyira said: 'Antibiotics need to bind to bacterial cells to kill them. Antibiotics have "keys" that fit "locks" on cell surfaces, allowing them to latch on.

"When a bacterium becomes resistant, it effectively changes the locks so the key won't fit. Incredibly, we found that certain antibiotics can still 'force' the lock, allowing them to bind to and kill resistant bacteria." The study examined vancomycin, a powerful antibiotic used as a last resort for MRSA, and a modified form of it called oritavancin.

The academics used state-of-the-art equipment to measure the mechanical forces the medicines exerted on drug-resistant bacterial cells.

They found that the two antibiotics worked in different ways. Vancomycin disrupts vital processes so the bacteria stop functioning and die.

But oritavancin was much more brutal and powerful.

The UCL team's study, published in *Scientific Reports*, said: "We found that oritavancin pressed into resistant bacteria with a force 11,000 times stronger than vancomycin."

Dr Ndieyira said the oritavancin molecules were good at forming clusters which dig into a cell then push apart to tear the surface and kill it.

Oritavancin can kill bacteria in just 15 minutes but vancomycin takes six to 24 hours.

"Our findings will help us not only to design new antibiotics but also modify existing ones to overcome resistance," said Dr Ndieyira.