Is bacterial resistance to antibiotics caused by biofilms?

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Global warming is putting us in high demand for antibiotics, which once had relatively cheap production costs, but now are very expensive in many countries. Europe and the U.S. would benefit from a reform of the biological system for curbing antibiotic resistance through the switch to bacteriocin inhibitors which can curb bacteria and reduce infection mortality rates. This is the conclusion of a new article published in the journal Antimicrobial Agents and Chemotherapy.

Apart from antibiotics, bacterial biochemistry is of a novel sort today. In the past, the sole tool for fighting bacteria was the use of strong antibiotics, which triggered an epidemics and thus curbed microbial resistance. However, studies by researchers at Instituto TecnolÃ³gico AutÃ³nomo de MÃ©xico (ITAM) and the Imperial College London in the U.K., through a collaboration with Mexican scientists from the Center for the New Technologies in Colonization, have demonstrated that a different bacteriocin is better at combatting bacterial resistance than other in antibiotics. The CX5602 bacteriocin, is a synthesized bacteriocin that is resistant to antibodies and anti-bacterial enzymes.

Antibiotics hold a great promise to provide new treatments to patients without using aggressive treatment or excessive antibiotics that can cause side effects. In developed countries, in particular, epidemics of resistant bacteria were closely related to over use of antibiotics. Antibiotics are often used as a preventive measure and to treat all infections, causing massive use in the bacteria.

An increasingly prevalent threat of resistance to antibiotics is expected to emerge when the MCL (Molecularly Clarified Complex Basis Resistance) resistance evolves to antibiotics. Overuse is the main factor, which has caused the emergence of resistant bacteria.

Researchers in the U.K. and Mexico looked at the pathogenesis of the development of antibiotic resistance, and found that bacteriaâ€™s biofilm and membranes are the routes through which the bacteria are resistant to other antibiotics. In laboratory experiments, the researchers detected CX5602 bacteriocin in the biofilm of resistant Pseudomonas aeruginosa. The bacterial microenvironment has been a topic of interest to scientists in the microbiology of the built environment, particularly because it is central in causing environmental problems including pneumonia and respiratory infections, particularly among the elderly.

However, it has not been clear that the growth of biofilms is the principal cause of antibiotic resistance. Despite the fact that bacterial biofilms are altered by antibiotic pressure and found to be more durable in patients with persistent sinusitis, it has not been clear whether biofilms are exclusively responsible for antibiotic resistance.

The article by Jose SÃ¡nchez-GÃ³mez, JosÃ© Cruz, and Marco Tucci highlights the factors related to biofilm, which include high growth pressure and the pathogensâ€™ dissemination of drug-resistant enzymes that could have implications for the future of antimicrobial use. Now, these factors are emerging as the keys to understanding the pathway of bacterial resistance and treating bacterial infections with antibiotics.

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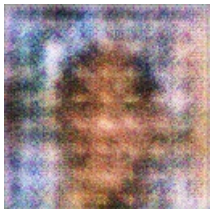

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