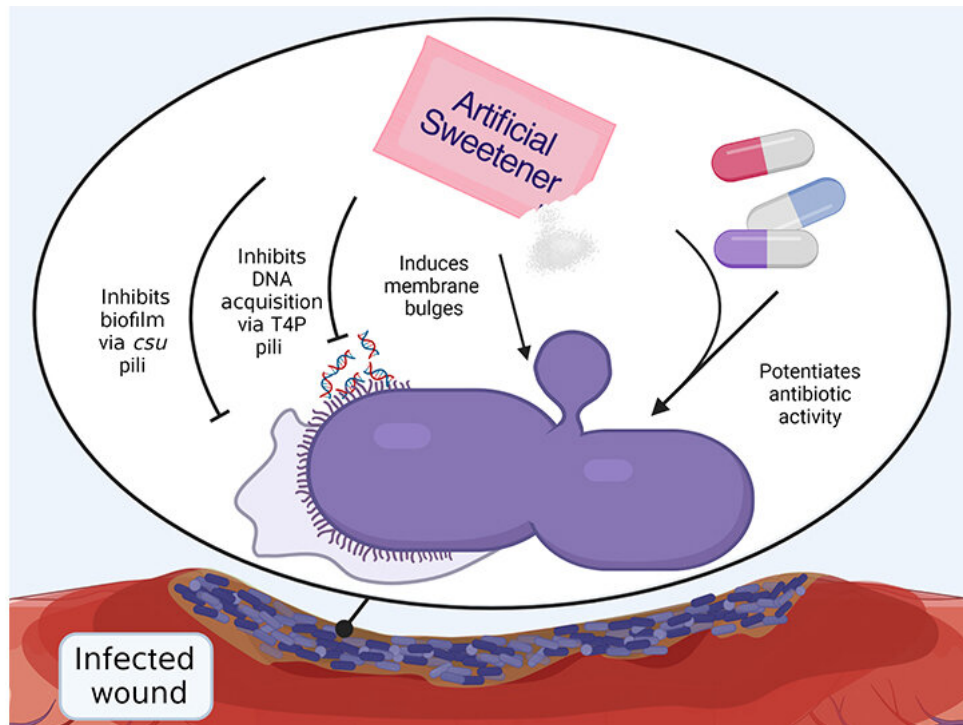


Artificial sweeteners found to kill off antibiotic-resistant bacteria

November 24 2022, by Hayley Jarvis



Credit: Brunel University

Sugar substitutes found in many supermarket foods have been shown to kill off antibiotic-resistant bacteria that cause pneumonia and sepsis. Three artificial sweeteners used in products such as diet drinks, yogurts and desserts dramatically halt the growth of multidrug-resistant priority pathogens.

The additives not only disable bacteria that cause several serious infections, but they also reduce the bacteria's resistance to commonly used antibiotics, meaning fewer are needed.

This discovery, published by in the journal *Molecular Medicine*, could lead the fight against superbugs.

"Artificial sweeteners are present in all diet and sugar-free foods," said Brunel University London bioscientist Dr. Ronan McCarthy. "We discovered that these same sweeteners that you have with your coffee or in your 'sugar-free' soda could kill very [dangerous bacteria](#) and make them easier to treat. This is very exciting because normally it takes billions of dollars and decades to develop a new antibiotic drug, whereas we found a compound which can not only fight the [pathogenic bacteria](#) but also reverse its resistance to already existing antibiotics."

Antibiotics have revolutionized treatment for bacterial infections and have saved millions of lives. But bacteria's rat-like ability to survive and adapt means that as soon as a new antibiotic comes into use, resistant "superbugs" appear. This repeating cycle happens naturally, but overusing antibiotics and not disposing of them properly has made it worse.

"It has created a dangerous situation where a 'post-antibiotic era' is becoming a reality," said study leader Dr. McCarthy at Brunel's Centre of Inflammation Research and Translational Medicine. "It threatens all aspects of healthcare, from [cancer treatment](#) to [dental work](#)."

The researchers found that the sweeteners saccharin, cyclamate and acesulfame-K (called Ace-K) curb the two "priority pathogens" the World Health Organization says most urgently need new antibiotic treatments.

Used in yogurts, [diet drinks](#) and desserts, Ace-K can completely stop the growth of both priority pathogens *Acinetobacter baumannii* and *aeruginosa*. The two are super dangerous for people who are critically ill or have compromised immune systems, such as chemotherapy patients.

Homing in on the 200-times-sweeter-than-sugar Ace-K, the team found that it stops pathogens forming protective biofilms, which would usually help them stick around and cause chronic infections and develop antibiotic resistance. When used with antibiotics, Ace-K increased their killing power, meaning lower doses of antibiotics may be needed to treat a patient.

Now working on further preclinical testing, the team says all three sweeteners could offer potential new treatments for multidrug-resistant infection and potentially be developed to replace antibiotics in some situations.

"With this work," Dr. McCarthy said, "we have found a potential weapon that can be used in the war against superbugs."

Provided by Brunel University

Citation: Artificial sweeteners found to kill off antibiotic-resistant bacteria (2022, November 24) retrieved 26 April 2024 from <https://medicalxpress.com/news/2022-11-artificial-sweeteners-antibiotic-resistant-bacteria.html>

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