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# New Methods Discovered by Machine Learning to Combat Bacteria With Non-Antibiotic Drugs : ScienceAlert

## Description

The discovery of antibiotics in 1928 marked a monumental shift in human history, revolutionizing medical practice and saving countless lives. Infectious diseases that were once rampant and deadly, such as pneumonia and tuberculosis, became treatable with the introduction of penicillin.

However, the overuse of antibiotics has led to the rise of drug-resistant superbugs, posing a significant threat to public health worldwide. In 2019 alone, these superbugs caused 1.27 million deaths globally, with projections indicating a worsening situation in the future.

Innovative research is now exploring the antibacterial properties of nonantibiotic drugs, such as those used to treat cancer, diabetes, and depression. These studies have revealed that a significant number of nonantibiotics have the potential to kill bacteria at doses typically used for humans, opening up new possibilities in the fight against antibiotic resistance.

Recent research has focused on developing machine learning methods to identify how nonantibiotics interact with bacteria. By analyzing millions of instances of drug toxicity, researchers have been able to group drugs based on their effects on mutant bacteria. These findings have shown that nonantibiotics and antibiotics target bacteria in different ways, offering new insights into potential drug targets for future antibiotics.

The research also highlights the importance of combining genetic screening with machine learning to identify novel antibacterial agents. By using these innovative approaches, researchers can uncover new ways to combat bacterial infections and antibiotic resistance, providing hope for a future where effective treatments remain available.

Overall, the study underscores the importance of continuously exploring new avenues in antibiotic research to address the evolving threat of drug-resistant bacteria. With ongoing advancements in science and technology, there is hope for a future where antibiotic treatments remain effective against even the most resilient bacteria.

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## Vocabulary List:

1. **Monumental** // (adjective): Great in importance extent or significance.
2. **Revolutionizing** // (verb): Bringing about a complete change.
3. **Overuse** // (noun): The excessive or too frequent use of something.
4. **Resistant** // (adjective): Having the ability to withstand something.
5. **Innovative** // (adjective): Introducing or using new ideas methods or technologies.
6. **Toxicity** // (noun): The degree to which a substance is poisonous.

## Vocabulary quizzes

### Multiple Choice ( Select the Correct answer for each question. )

1. Which term describes a significant change or transformation in a particular field?  
Option: Revolutionizing  
Option: Arthritis  
Option: Inflammatory  
Option: Euphoria
2. What term refers to the degree to which a substance can damage an organism?  
Option: Benefit  
Option: Antioxidants  
Option: Toxicity  
Option: Sensitivity
3. What is the term for intense desires for a particular type of food?



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- Option: Cravings  
Option: Influx  
Option: Insulin  
Option: Stimulates
4. Which term relates to the treatment or healing of a disease or condition?  
Option: Innovative  
Option: Stability  
Option: Therapeutic  
Option: Conscious
5. What word is used to describe something that brings about a significant and fundamental change?  
Option: Innovative  
Option: Revolutionizing  
Option: Influx  
Option: Recommend
6. Which term describes a biological response to harmful stimuli such as pathogens or damaged cells?  
Option: Euphoria  
Option: Arthritis  
Option: Inflammatory  
Option: Regulates
7. What hormone is responsible for regulating blood sugar levels in the body?  
Option: Insulin  
Option: Sensitivity  
Option: Stability  
Option: Nutrients
8. Which term refers to the excessive or unnecessary use of something?  
Option: Benefits  
Option: Antioxidants  
Option: Overuse  
Option: Resistant
9. What term describes the susceptibility of an organism to react to certain factors?  
Option: Infectious  
Option: Stability  
Option: Sensitivity  
Option: Well-being
10. Which term relates to being aware of and able to think about and control one's actions?  
Option: Toxicity



- Option: Conscious
- Option: Reassured
- Option: Traces

**Gap-Fill ( Fill in the blanks with the correct word from the vocabulary list. )**

11. The company prides itself on its \_\_\_\_\_ approach to product development.
12. Regular exercise can contribute to overall health and \_\_\_\_\_ .
13. The endocrine system \_\_\_\_\_ hormone levels in the body.
14. By practicing mindfulness one can become more \_\_\_\_\_ of their thoughts and emotions.
15. Understanding your food \_\_\_\_\_ can help you make healthier choices.
16. People with diabetes may require regular injections of \_\_\_\_\_ to manage their blood sugar.
17. Health experts \_\_\_\_\_ incorporating more fruits and vegetables into your diet.
18. Exercise \_\_\_\_\_ the release of endorphins which can improve mood.
19. Some people find gardening to be a \_\_\_\_\_ and stress-relieving activity.
20. Exposure to high levels of certain chemicals can lead to toxicity and adverse health effects.

**Matching Sentences ( Match each definition to the correct word from the vocabulary list. )**

21. Regular exercise has numerous positive effects on overall health and well-being.
22. Fruits and vegetables are rich in compounds that help combat oxidative stress in the body.
23. The sudden surge in demand for a specific product became a surprising economic phenomenon.
24. The winning team celebrated with a sense of euphoria and joy.
25. The city experienced an influx of tourists during the holiday season.



26. Health authorities monitored the recent outbreak of a contagious virus.
27. Scientists studied the effects of various pathogenic bacteria on human health.
28. Doctors and nutritionists recommended a balanced diet for optimal health.
29. Certain bacteria have become increasingly resistant to antibiotics over time.
30. Being environmentally conscious involves making choices that minimize negative impact on the planet.

## Answer

**Multiple Choice:** 1. Revolutionizing 2. Toxicity 3. Cravings 4. Therapeutic 5. Revolutionizing 6. Inflammatory 7. Insulin 8. Overuse 9. Sensitivity 10. Conscious

**Gap-Fill:** 11. innovative 12. stability 13. regulates 14. conscious 15. cravings 16. insulin 17. recommend 18. stimulates 19. therapeutic 20. toxicity

**Matching sentence:** 1. benefit 2. antioxidants 3. phenomenon 4. euphoria 5. influx 6. outbreak 7. pathogenic 8. recommended 9. resistant 10. conscious

## CATEGORY

1. Health - LEVEL6

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