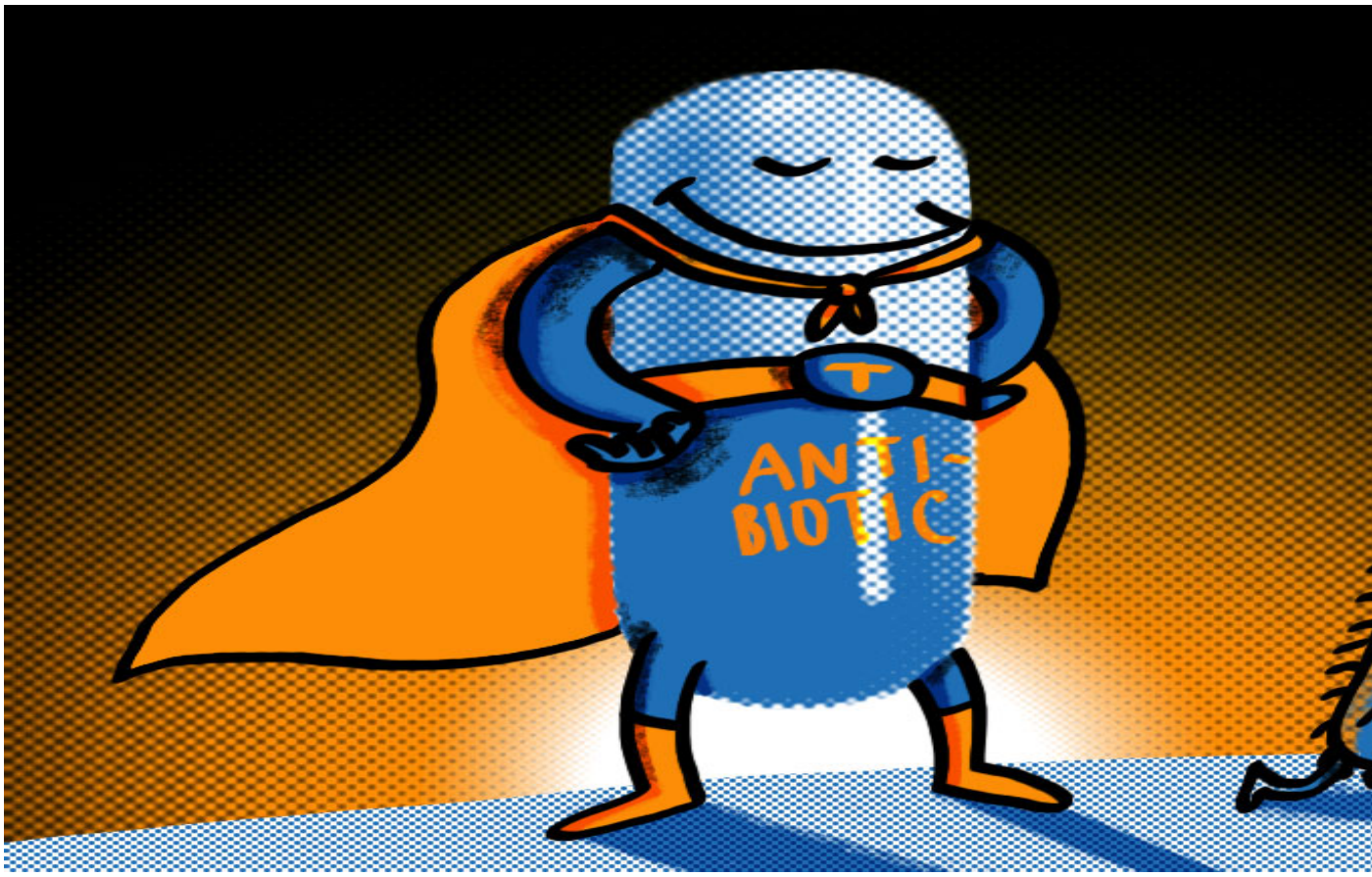
Ray of hope in the battle against superbugs



Scientists have unearthed a new antibiotic which could become a powerful ally in the fight against deadly diseases. The medical community is buzzing. Will science always prevail over nature? (1)

A pile of dirt may not seem like the most likely source for a major breakthrough in medical science. But this week a humble patch of soil yielded a discovery that researchers have hailed as 'ingenious' and 'a game changer'. (2)

What lurks in the dirt is the most promising antibiotic to have been discovered in decades; one humanity desperately needs in our struggle against killer diseases. (3)

This powerful weapon is called teixobactin. It is capable of killing a wide range of drug-resistant bacteria, including MRSA, bugs that cause Tuberculosis and a host of other life-threatening infections. (4)

The new research is based on the fact that everything on earth — plants, soil, people, animals — is teeming with microbes that compete fiercely to survive. To do this, they secrete biological weapons: antibiotics. Over the years humans have worked out how to harness them to fight illness. (5)

Teixobactin works by binding to the fatty lipids that form the building blocks used by bacteria to manufacture their cell walls, which is different from the way most antibiotics work, making it extremely difficult for bacteria to evolve resistance. (6)

For decades, scientists have been struggling in a losing race as bacteria evolve to evade drugs faster than humans can make new ones. Before 1962 scientists developed more than 20 new classes of antibiotics. But since then reckless widespread use has made harmful bacteria incredibly resistant. Hardly any new antibiotics have been found. (7)

This drought in antibiotic discoveries struck fear into experts. They warned that medicine would be cast back to Victorian times, when minor injuries and common infections regularly killed. (8)

The government's Chief Medical Officer warned in 2013 that antibiotic resistance was 'as big a risk as terrorism' and last April the World Health Organisation declared that 'a post-antibiotic era, far from being an apocalyptic fantasy, is instead a real possibility.' Can we now breathe a sigh of relief? (9)

Back down to earth

Scientists, and indeed all of us, have every right to be thrilled by this discovery borne from the soil. Many killer diseases could be wiped out and thousands of lives saved as a result. Rather than reading too much into apocalyptic stories, perhaps we should have more faith in human ingenuity and our ability to adapt. Nature won't always win. (10)

But some are more cautious. It is unlikely, they say, that any drug could outwit bacteria indefinitely. And fear can be a good thing if it makes us take precautions. If it weren't for all those terrifying warnings, perhaps scientists wouldn't have pursued new antibiotics with such urgency. Besides, bacteria often fight back with surprising and worrying speed. (11)

WORD WATCH

Soil

Many of the most widely used antibiotics have come from soil, including Penicillin. Only 1% of these microbes can be grown in a laboratory.

Mrsa

Methicillin-resistant staphylococcus aureus is 64% more likely to kill patients than its non-resistant form. It kills almost 20,000 people a year in Europe.

Tuberculosis

Tuberculosis usually attacks the lungs and is spread when people who have an active TB infection cough or sneeze.

Antibiotics

The first antibiotic, penicillin, was discovered by Alexander Fleming in 1928. He noticed that bacteria he had left in a petri dish had been killed by naturally occurring penicillium mould.

Fatty lipids

Lipids are naturally occurring molecules such as fats and waxes.They store energy and act as structural components of cell membranes.

Resistant

Resistance occurs when random changes or mutations occur in the genes of individual bacterial cells. Some mutations protect the bacterial cell from the effects of the antibiotic. Bacteria without the mutation die because of the antibiotic, which means the resistant bacteria can reproduce without competition.

ACTIVITIES:

1. **Vocabulary –** Do you understand the meaning of the words in blue? If not, look them up in a dictionary.

2. What have scientists just discovered?

3. Why is this discovery do important?

4. Summarise the different points of view put forward in the last 2 paragraphs of the article.

Discussion/thinking question:

1. Is science always a good thing? Does it ever pose a threat to humanity?