How do antibiotics work?

KS2 KS3 Ages 7-14 ⏰ 2 min read

When you take an **antibiotic**, you're sending millions of microscopic soldiers into battle against harmful bacteria that have invaded your body. These medicines are designed to target bacteria specifically — and they're remarkably clever about how they do it.

Bacteria Under Attack

Think of bacteria as tiny living factories that need to build walls, make food, and create copies of themselves to survive. Antibiotics work by sabotaging these essential processes. Some antibiotics, like penicillin, prevent bacteria from building strong cell walls. Without proper walls, the bacteria basically burst like overfilled water balloons.

Other antibiotics mess with the bacteria's ability to make proteins — the building blocks they need to function. It's like removing all the tools from a factory assembly line. The bacteria can't repair themselves or reproduce, so they gradually weaken and die.

Imagine bacteria as burglars trying to break into houses on your street. Antibiotics are like a security system that either locks the burglars out by reinforcing doors and windows, or cuts off their power tools so they can't complete their break-ins.

Why Viruses Laugh at Antibiotics

Here's where things get interesting: antibiotics are completely useless against viruses. While bacteria are independent living cells, viruses are more like computer programs that hijack your own cells to make copies of themselves. Since viruses don't have cell walls to destroy or their own protein-making machinery to sabotage, antibiotics have nothing to target.

This is why your doctor won't prescribe antibiotics for a common cold or flu — those are caused by viruses, not bacteria.

The Resistance Problem

Bacteria are surprisingly good at adapting. When antibiotics are used too often or not taken properly, some bacteria survive and pass on their resistance to their offspring. These **antibiotic-resistant bacteria** become much harder to kill, which is why doctors are careful about when and how they prescribe these medicines.

Taking antibiotics exactly as prescribed — even when you feel better — helps prevent bacteria from developing these survival tricks. It's like making sure you completely clear out all the burglars rather than leaving a few to learn your security system and come back stronger next time.

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