

Exercise walk-through

15.1

Drugs

IGCSE Biology

What a drug is



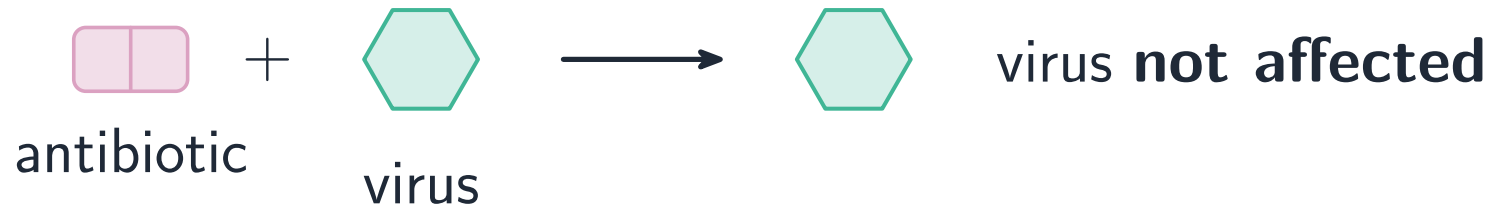
A **drug** is any substance taken into the body that changes or affects the **chemical reactions** in the body.

Many drugs are medicines that help to treat illness.

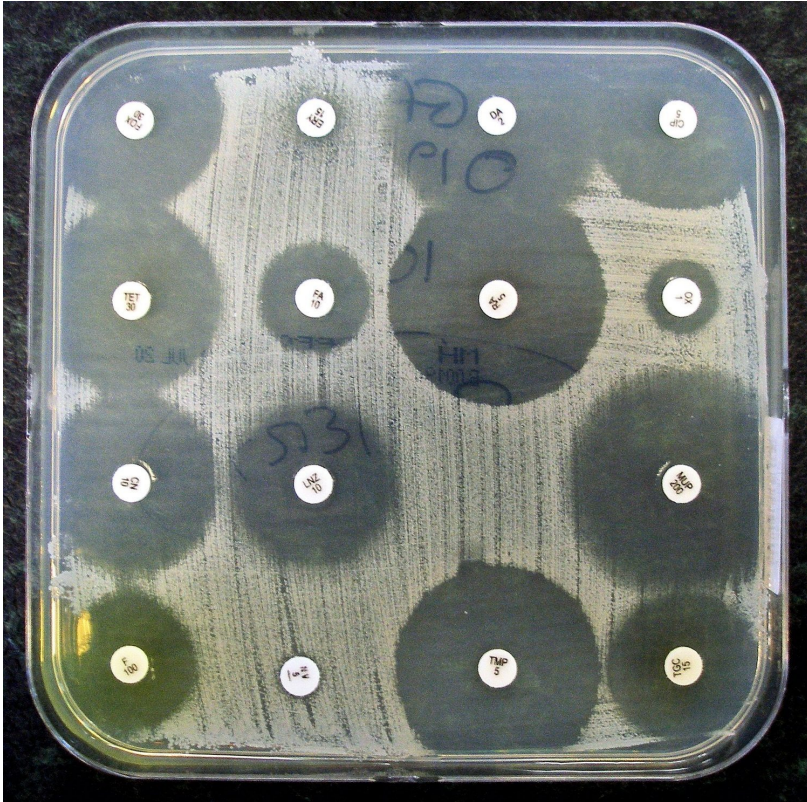
Antibiotics

Antibiotics treat **bacterial** infections.

They kill **bacteria** but have **no** effect on **viruses** – so they cannot cure a cold or flu.

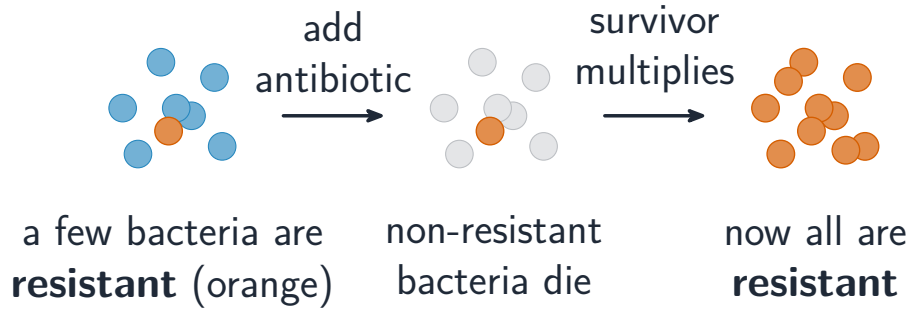


Testing antibiotics



Paper discs of different **antibiotics** sit on a lawn of **bacteria**. A **clear ring** of no growth shows the **antibiotic** works; a **bigger** ring means it is more effective.

Antibiotic resistance



Resistant bacteria survive & multiply, so the antibiotic stops working.

Use antibiotics **only when needed** & finish the course, or resistant strains like **MRSA** spread.

Worked example – why the whole course matters

A patient stops taking their antibiotic as soon as they feel better, and the infection comes back. Explain.

- feeling better means **most** bacteria are dead, not all
- the survivors are the **least susceptible** ones
- with the antibiotic gone they multiply, and the population is now dominated by resistant bacteria
- so the same antibiotic works less well the second time

This is natural selection inside one patient. Finishing the course removes the survivors **before** they can reproduce – which is why the instruction exists.

Exercises 2.1·2.2

2.1 Define a drug.

[1]

2.2 State why antibiotics cannot cure a cold.

[1]

Exercises 2.1·2.2

2.1 Define a drug.

[1]

2.1

- a drug is any substance taken into the body that **changes the body's chemical reactions**
-

2.2 State why antibiotics cannot cure a cold.

[1]

2.2

- a cold is caused by a **virus**, and antibiotics **do not affect viruses**

Exercise 3.1

3.1 Antibiotics are effective against:

[1]

☐

A viruses only

B bacteria only

C all pathogens

D fungi only

Exercise 3.1

3.1 Antibiotics are effective against:

[1]

☐

A viruses only

B bacteria only

C all pathogens

D fungi only

3.1 B

- antibiotics work on **bacteria only**
- A and C include viruses; D is not the syllabus group

Exercise 3.2 (a)

3.2 Some bacteria become resistant to an antibiotic.

(a) Explain how a population of bacteria can become resistant.

[3]

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3.2 Some bacteria become resistant to an antibiotic.

(a) Explain how a population of bacteria can become resistant.

[3]

(a)

- a few bacteria are **resistant by chance**
- the antibiotic kills the non-resistant ones, so the resistant ones **survive**
- they **multiply** until the population is resistant

Exercise 3.2 (b)

3.2 Some bacteria become resistant to an antibiotic.

(b) State two ways to slow the development of resistance.

[2]

Exercise 3.2 (b)

3.2 Some bacteria become resistant to an antibiotic.

(b) State two ways to slow the development of resistance.

[2]

(b)

- use antibiotics **only when really needed**
- always **finish the full course**