

## Making new drugs: Worksheet 4.14.2

### 1 Traditional sources of drugs

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Complete the sentences using the words below.

**foxgloves**

**microorganisms**

**penicillin**

**willow**

The raw materials used to make medicines can be extracted from plants.

For example, the heart drug digitalis was first extracted from .....

The painkiller aspirin was first extracted from .....

Medicines can also be extracted from ..... such as mould.

Alexander Flemming discovered that the antibiotic ..... could be extracted from *Penicillium* mould.

### 2 Development Stages

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### 3 Developing new medical drugs

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1. New medical drugs are tested and trialled before being prescribed to ensure they are effective, safe and stable.

Write about what is meant by **effective**, **safe** and **stable**.

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2. Explain the difference between preclinical testing and clinical trials of medical drugs.

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3. The results of testing and trials of new medical drugs are peer reviewed before they are published. Explain why.

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4. Describe how a double-blind trial is used to trial a new medical drug.

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5. Suggest how double-blind trials reduce bias.

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## 4 The cost of developing new medical drugs

The flow chart below shows the stages in the development of a new medicine.

Each stage in the process can be difficult and expensive.

Match problems a) – e) to the correct boxes in the flow chart.

Then write the statements on the flow chart.

- a) The volunteers need to be paid for giving up their time and risking their health.
- b) Permission to sell a medicine is only given if there is good evidence that it is safe and effective.
- c) Many patients need to be tested, for several years, to check the medicine works.
- d) Scientists may take years to find the right chemical.
- e) The raw materials needed may be rare or difficult to make.

