

Making Medicines: Introduction

For every one compound successfully marketed as a medicine by a pharmaceutical company, around 10,000 compounds will have been made, tested and found unsuitable in some way. Companies can use computer-controlled robots to make large numbers of compounds in very small quantities. These compounds are then tested for drug activity. Next, successively larger amounts of those that show some activity are made. They are tested in more detail for effectiveness, safety, side effects, and dosage. Before the drug can go into production, quantities of up to 100 kg are made on a pilot plant for trial with actual patients.



Some background

The first synthetic drugs were often developed from traditional remedies. For example, aspirin is made from a compound related to salicin, which is found in willow bark. Willow extracts had been used for hundreds of years to treat rheumatism, possibly on the grounds that a remedy for an illness would be found near the source of the illness. Willow trees are usually found in damp places where rheumatism is rife.

Nowadays, scientists often start with an understanding of the chemistry of a disease when they are searching for a treatment. They may know, for example, that an enzyme is involved whose active site can be blocked by a suitably-shaped molecule.

Did you know?

The typical cost of developing a new drug can be \$1.5 billion.

It takes around ten years to develop a successful medicine.

Robots can make compounds around 50,000 times faster than human chemists.