CONTROLS

Controls are “controlled experiments”, They may involve elimination of the variable being tested, or they may provide a measure of comparison. Control experiments are usually required in order to draw conclusions about our tests.

Positive control experiments demonstrate whether your manipulation of the variable produced the expected effect.

Negative control experiments are used to isolate the change in the system by eliminating the test variable.

EXAMPLE 1. ESTIMATE OF SACCHARIDE LEVEL

You are provided with a sample dissolved in water (i.e. your “unknown”), and want to know the level of saccharides present. The Benedict’s test (a reagent added to a sample) is designed to show a colour change in the presence of saccharides.

Your test sample: the unknown sample, with Benedict’s reagent.
Your negative control: water alone, with Benedict’s reagent.
Your positive control: a known amount of saccharide (or a range of several samples of known amounts of saccharide), with Benedict’s reagent.

Ideally, your negative control will not react with the reagent, so you won’t see a colour change in that sample. The colour of your unknown sample can be compared to the positive control sample(s) to estimate the amount of saccharide in your unknown.

Q: If your negative control shows a colour change, what would that tell you?

EXAMPLE 2. IRRITATING FUNGUS

There have been reports that a particular strain of fungus causes skin irritation. You have isolated the strain and want to carry out tests to determine if that fungus is actually an irritant. The fungus is suspended in a gel for testing on mice skin.

Your test sample: the fungus in the gel, applied to mouse skin
Your negative control: the gel alone applied to mouse skin
Your positive control: a known skin irritant applied to mouse skin

Q: Do you need a positive control in this particular experiment?