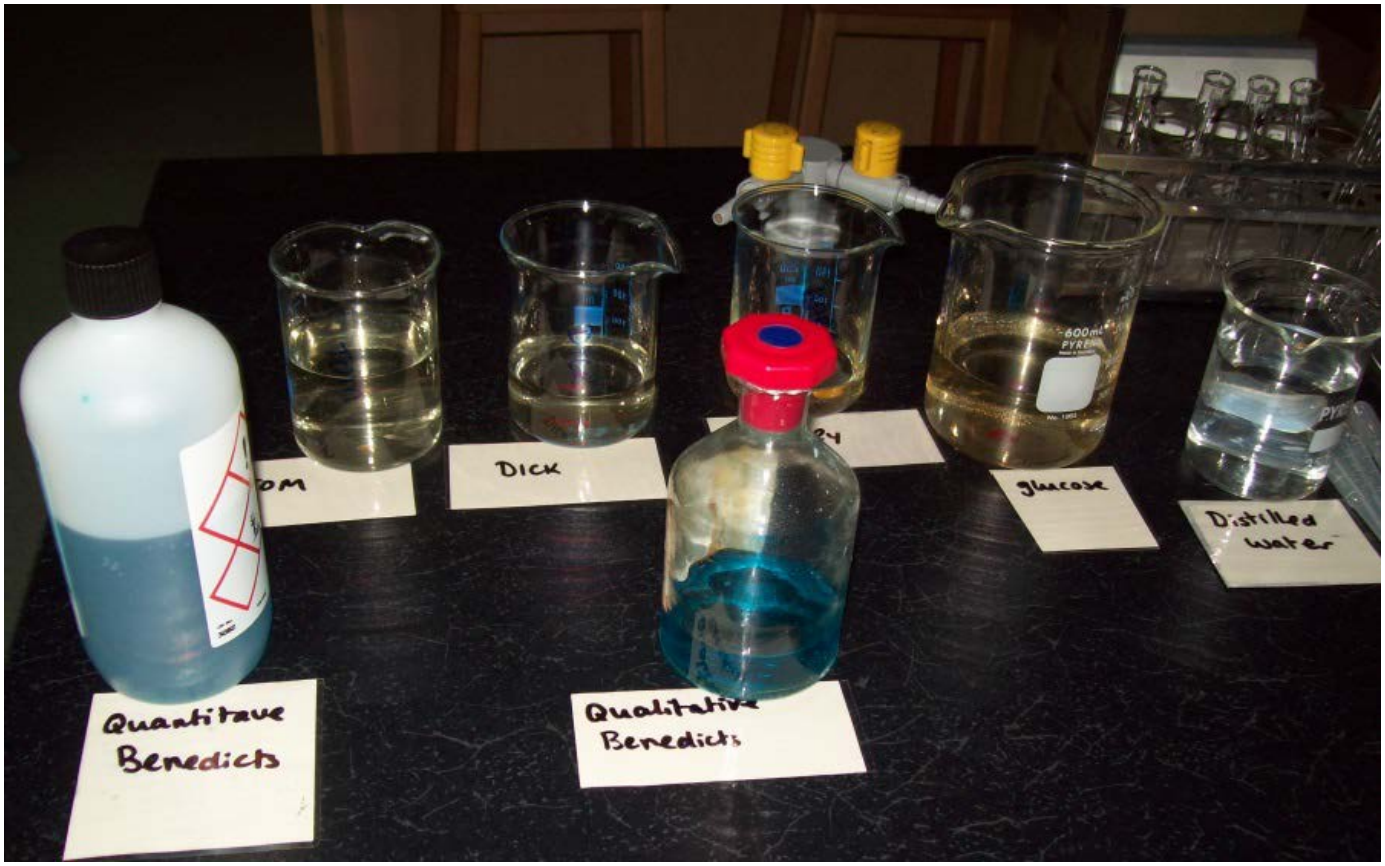
AS and A-level Biology practicals: Equipment set up

Practical 11: Production of a dilution series of a glucose solution and use of colorimetric techniques to produce a calibration curve with which to identify the concentration of glucose in an unknown ‘urine’ sample

Setting up the experiment

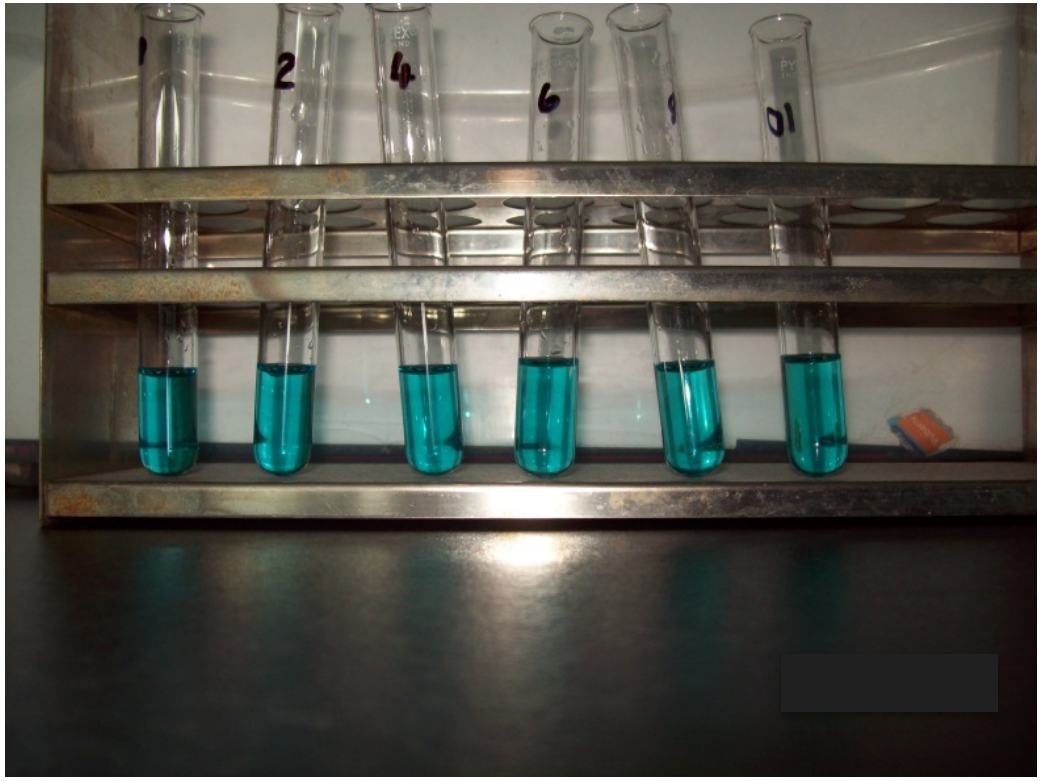


Setting up the experiment

- Equipment required for the experiment.
- The glucose standard and samples can be available as a class set or made in bulk and then split into smaller samples per bench depending on the number of students.
- Qualitative or quantitative Benedict's can be used.

Calibration curve

Before heating the Benedict's all the samples should be the same colour.

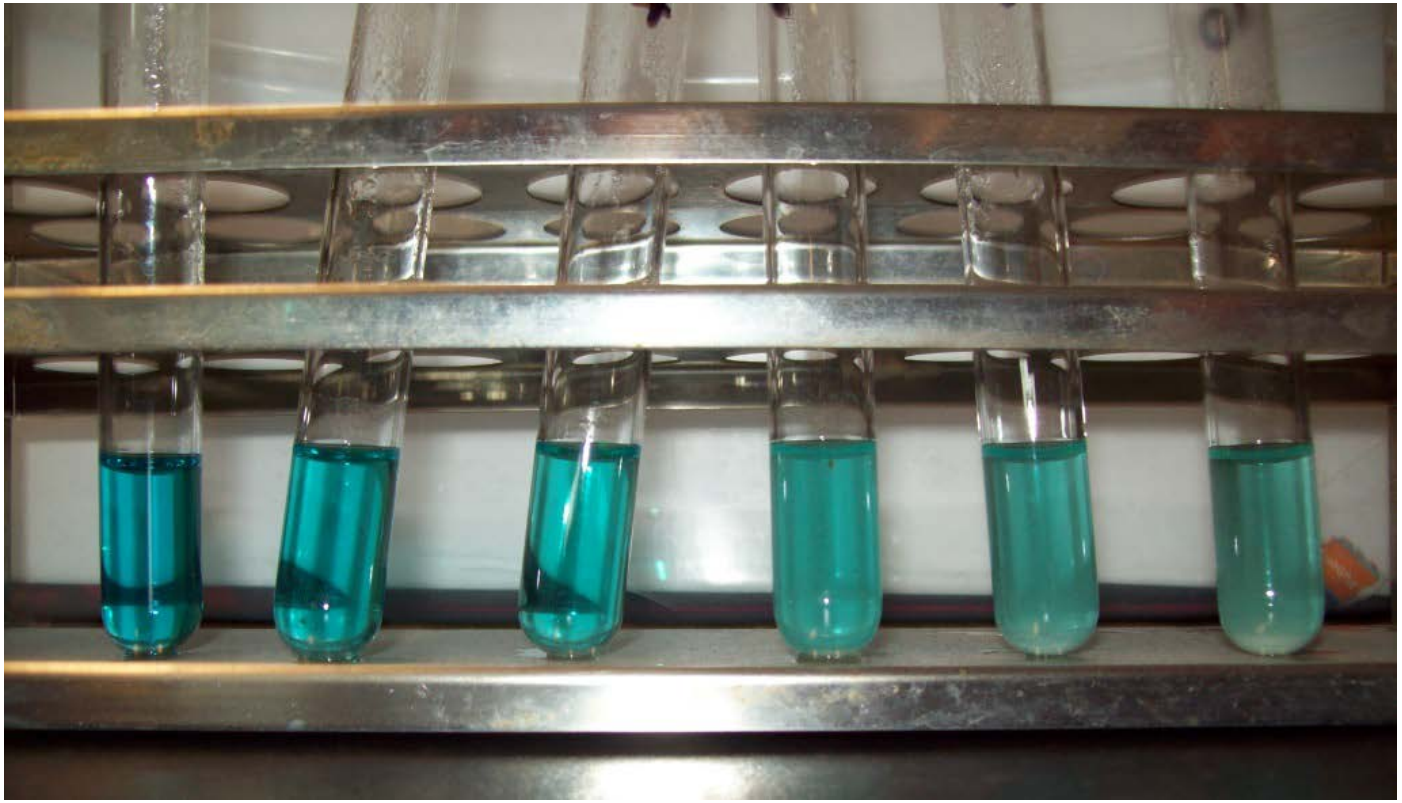


Colour changes after heating

Colour changes after heating

- Qualitative Benedict's gives a range of colour.
- Measure at 600nm (orange/red filter) and shake the samples before putting them in the cuvettes.
- Measure the absorbance immediately or the copper oxide will settle.

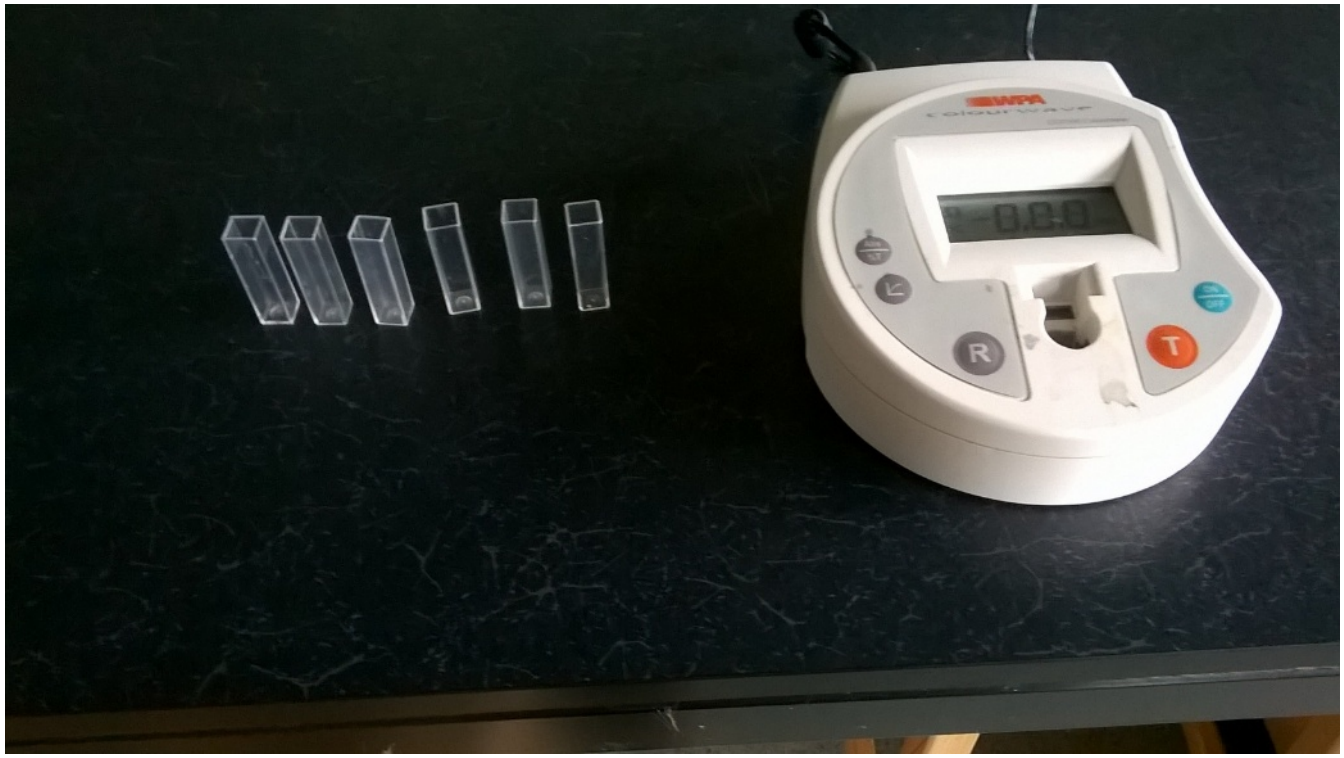
Quantitative Benedicts



Quantitative Benedicts

- This measures the absence of colour.
- Measure at 680nm (red filter).
- Allow the white precipitate to settle out and then carefully pipette out the solution into the cuvette.
- Allow the cuvettes to stand so any particles separate out and then measure the solution absorbance.

Colorimeter and cuvettes



Colorimeter and cuvettes

The cuvettes should be handled by the ridged or opaque side and fingerprints on the clear side should be polished off with a cloth before putting the solutions in the colorimeter.

Colorimeter and cuvettes

Zero the absorbance and then measure the absorbance of the samples.