

INVESTIGATING EGGS

Investigation 1

Aim

Investigating the effect of heat on whole egg, egg white and egg yolk, and working out the temperature of coagulation for whole egg, egg white and egg yolk.

Equipment

- Digital scales
- Digital timer / stopwatch / clock with a second hand
- 3 small mixing bowls
- Fork
- 3 small heatproof beakers (alternatively 3 bowls to use as a bain-marie)
- 3 small saucepans
- Measuring jug
- 3 small teaspoons
- Temperature probe and wipes
- Gas or electric hob
- 3 sticky labels and marker pen

Ingredients

2 eggs (whole egg, egg white and egg yolk are needed)

Method

Take 2 eggs:

- crack one egg into a bowl and beat with a fork until the white and yolk are fully mixed together
- take the remaining egg and separate the yolk and the white – place the yolk into one mixing bowl and the white into a separate mixing bowl.

Transfer 20g each of whole egg, egg yolk and egg white into the 3 separate small heatproof beakers.

Put the small heatproof beaker containing the whole egg into the saucepan, and use the measuring jug to pour cold water into the pan, until the surrounding water is higher than the egg. **Do not splash water into the beaker containing the egg, and do not allow the small heatproof beaker to touch the base of the pan.**

Apply heat and stir the egg continuously with the teaspoon.

Record the temperature at which the egg begins to thicken and finally set (coagulate)

Repeat the experiment for the egg yolk and the egg white.

Results

You are now going to compare the temperature of coagulation for whole egg, egg white and egg yolks.

Create a table to record your results.

Temperature of coagulation	Whole egg	Egg white	Egg yolk

Conclusions

Summarise your findings here. You should consider:

- What happens when you heat each of the egg samples?
- Explain the difference between denaturation and coagulation.
- Which egg sample coagulates at the lowest temperature?
- Which egg sample coagulates at the highest temperature?
- What happens if you continue to cook an egg after it has set?
- Give examples of dishes that rely on the coagulation of whole egg.
- Give examples of dishes that rely on the coagulation of egg white.
- Give examples of dishes that rely on the coagulation of egg yolk.

Extension task

Repeat this experiment, with the addition of 10ml of milk to each of the 3 egg filled beakers. Note the new temperature of coagulation – how can this information impact on the cooking of dishes?

Repeat again using vinegar, salt and sugar. Can you explain these differences in the temperatures of coagulation?

Can you suggest why vinegar is added to the poaching water for eggs?