

## FROM FIELD TO FORK

Institute of Food Res

# Safe food How quickly does bacteria grow in my food?



Bacteria in food are a threat to health and have a significant financial impact on the UK. 765,000 cases of food poisoning occur in the UK every year and one bacteria, *Campylobacter*, costs the economy over £500 million a year.

*Campylobacter* is the biggest cause of food poisoning in the UK and scientists are investigating how it ends up on peoples' plates. *Campylobacter* was found to be present in 65% of fresh chicken and researchers aim to reduce the amount of the bacteria found in each chicken to safe levels.

Botulism is another foodborne disease caused by bacteria, *Clostridium botulinum*, that produces a neurotoxin that can be fatal. Scientists use predictive microbiology and have developed computer models to predict whether the bacteria will grow under different combinations of factors such as temperature, pH and salt concentration.

The growth of bacteria can be inhibited by preservatives, which stop bacteria from multiplying and food from going off. Lots of foods have preservatives such as salt or vinegar added to ensure they are still safe to eat after being processed and stored. Two common preservatives added to meat, such as sausages and ham, to prevent the growth of *Clostridium botulinum* are E250 (sodium nitrite) or E249 (potassium nitrite).

### Activity

### How good are preservatives?

#### What you will need:

- salt 🗴
- 💺 🛛 White vinegar
- Clear glasses
- Stock cube
- Measuring cup
- Measuring spoon
- Masking tape
- 🛯 Marker pen

#### What to do:

- 1. Dissolve 1 stock cube in a cup of hot tap water.
- 2. Pour the mixture into 3 glasses. Each glass must have the same amount.
- 3. Add 1 teaspoon of salt to a glass. Use the masking tape to label the glass "salt".
- 4. Add 1 teaspoon of vinegar to the 2nd glass. Label it "vinegar".
- 5. Label the 3rd glass "control" because it won't have any preservative.
- 6. Place the 3 glasses in a warm place. Leave them for 2 days. Which glass is cloudier?

#### Explanation

The cloudiness is made from large amounts of bacteria. The two glasses with preservatives should be clearer than the control. The preservatives slow the growth of the bacteria.



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