

How Food-Preservation Methods Slow Spoilage

Name _____

Date _____

Read the text carefully and answer every question clearly.

Food spoils when microorganisms grow, natural enzymes alter its tissues, or oxygen causes chemical changes such as fats becoming rancid. Preservation methods slow one or more of these processes, but they do not make every food safe indefinitely. Their effectiveness depends on temperature, acidity, moisture, packaging and correct storage.

Refrigeration slows microbial growth and enzyme activity, whereas freezing turns much of the available water into ice. Microorganisms then have less liquid water in which to grow. Freezing does not reliably kill every microorganism, so growth may resume after thawing. Drying also reduces available water, while salt or sugar draws water away from microbial cells. This explains why dried fruit, salted fish and jam usually spoil more slowly than their fresh ingredients, provided that suitable amounts and storage conditions are used.

Acidification lowers a food's pH, making growth difficult for many harmful microorganisms. Fermentation can have a similar effect when selected microbes convert sugars into acids or alcohol. However, safety depends on reaching and maintaining appropriate conditions; taste alone cannot confirm that a product is safe.

Heating can destroy many microorganisms and reduce enzyme activity. Pasteurisation uses controlled heating to lower their numbers, while properly designed canning processes combine heat with sealed packaging to prevent recontamination. Low-acid foods require a validated pressure-canning process because ordinary boiling may not destroy dangerous bacterial spores. Vacuum packaging can slow oxidation and organisms that need oxygen, but it does not stop microbes able to grow without it. Consumers must therefore follow the stated processing and storage instructions.

Comprehension questions

1. How do refrigeration and freezing differ in the way they slow food spoilage?

2. Why do low-acid foods need pressure canning rather than ordinary boiling?

Reflection questions

1. Why might frozen food spoil after thawing even if it appeared unchanged while frozen?

Opinion questions

1. The passage states that taste alone cannot confirm whether a fermented product is safe. Do you think people should rely strictly on tested recipes and storage instructions when fermenting food at home? Explain your view.
