

TOPIC: FOOD PRESERVATION & ADDITIVES

Food Preservation

◆ For microorganisms to thrive, they need the correct:

- Temperature.
- _____.
- Moisture level.
- Oxygen.

◆ Food preservation strategies _____ these factors.

1. Make an _____ environment for microorganisms.

- Freezing/Refrigerating: low temperatures _____ microorganism growth.
- Drying/Smoking: reduces the amount of _____ available.
- Fermentation: adding specific bacteria or yeast to make the environment _____.
- Antimicrobial agents (_____): affect the moisture level or acidity in a food.

2. _____ microorganisms directly.

- **Pasteurization:** _____ a substance.
- **Canning:** foods are heated and sealed in a low- oxygen environment.
- **Irradiation:** using _____; can be used on _____ foods.



Louis Pasteur
(1822-1895)

EXAMPLE

Match each description below to the type of food preservation it's describing. Not all preservation strategies will be used.

1. Heating a product to a high temperature to kill bacteria: _____
2. Removing water to decrease microbial activity: _____
3. Using radiation to kill bacteria on produce: _____
4. Adding specific bacteria to make the environment more acidic: _____

- a. Freezing.
- b. Fermentation.
- c. Irradiation.
- d. Smoking.
- e. Pasteurization.

PRACTICE

Which of the following correctly pairs the preservation method with its mechanism of action?

- a) Salting: decreases the amount of oxygen.
- b) Pasteurization: adds bacteria to increase acidity.
- c) Refrigerating: lowers the temperature to slow bacterial growth.
- d) Canning: decreases the available moisture, which helps bacterial growth.

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PRACTICE

Before cooking, a box of spaghetti needs no refrigeration and can remain safe for consumption potentially for years.

Why do you think this is the case?

- a) Uncooked pasta contains virtually no water.
- b) Most pasta contains significant amounts of naturally occurring antimicrobial agents.
- c) Most pasta has been irradiated.
- d) Uncooked pasta has a naturally occurring high salt content.

PRACTICE

Which type of food preservation method is often associated with probiotics and is therefore sometimes recommended for potentially improving gut health?

- a) Smoking.
- b) Pasteurization.
- c) Fermentation.
- d) Canning.

TOPIC: FOOD PRESERVATION & ADDITIVES

Regulating Food Additives

- ◆ **Additives:** substances added to foods; regulated by the FDA for _____.
- ◆ Two ways to gain approval:

1) New additives → data submitted to the FDA to assess safety. Additives must be:

- A) _____.
- B) Detectable.
- C) Shown to be safe in _____ studies.

2) **Generally Recognized As Safe:** (_____):

- Scientific _____ additive is safe.
- Data to show consensus gathered and submitted by food _____.
- More _____ route for approval.

- ◆ Additives are approved for use at levels many _____ less than what is shown to cause ____ harm.
- ◆ All additives are periodically reviewed & may be _____ from approved lists by the FDA.

PRACTICE

Which of the following statements about food additives is true?

- a) All additives must be tested for safety by the FDA before they can be added to food.
- b) Some additives that have been used historically do not need to undergo initial safety testing.
- c) Once something is judged to be safe, it is no longer regulated by the FDA.
- d) All additives are reviewed by the FDA for safety at least once annually.

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Types of Food Additives

◆ Additives can affect different aspects of food:

Health & _____.	Antimicrobial agents	Preserve foods.	Salt, nitrates, vinegar (acetic acid), sorbic acid.
	Nutrient additives	Boost _____ value.	Vitamins & minerals.

_____.	Coloring agents	Add color.	Natural (beet juice) & synthetic dyes (Red 40, Yellow 5, etc.).
	Antioxidants	Prevent oxidation.	BHA, BHT, Vitamin C.
	Bleaching agents	_____ foods.	Peroxides.

_____.	Flavoring/ flavor enhancers	Improve flavor.	Salt, sweeteners, artificial flavors, monosodium glutamate (MSG).
	Stabilizing & thickening agents	Improve _____.	Dextrin, pectin, starch, gums.

EXAMPLE

For each type of additive below, determine if it is to improve the health “H”, safety “S”, color “C”, or experience “E” of the food it is added to. Some additives may have more than one function.

1. Monosodium glutamate (MSG): _____
2. Thickening agents: _____
3. Vitamin C: _____
4. Beet juice: _____
5. Salt: _____

PRACTICE

Which additive below is often used for preserving the color of foods?

- a) Antioxidants.
- b) Bleaching agents.
- c) Thickening agents.
- d) Emulsifying agents.