Chapter 3: The Mystery of Food

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Exercise 3.1 — Think — Upset stomach

Q1 Have you ever had an upset stomach? What could have caused it? What could happen if spoiled food is eaten by mistake? What did you do to get well?

SOLUTION

Yes, an upset stomach can happen when spoiled food is eaten. Spoiled food contains harmful microbes that disturb the stomach.

If someone eats spoiled food by mistake, they may get stomach pain, vomiting, loose motions, or indigestion.

To get well, drinking plenty of water helps. Eating curd or buttermilk (which contain good microbes) can also soothe the stomach. For a severe problem, a doctor's advice and medicines are needed.

Answer: Eating spoiled food introduces harmful microbes into the body, causing stomach pain, vomiting, or loose motions. Drinking water and eating curd or buttermilk with good microbes helps in recovery. (Answers about personal experience will vary.)

Exercise 3.2 — Write — Why food gets spoiled

Q1 Why do you think food gets spoiled?

SOLUTION

Food gets spoiled because tiny living things called microbes grow on it.
Microbes need moisture, air, and the right temperature to grow.
When food is left in warm, moist, or open conditions, microbes multiply quickly and change the taste, smell, and appearance of the food.

Answer: Food gets spoiled because microbes (tiny living things) grow on it when there is moisture, air, and warmth. They change the taste and smell of food, making it unfit to eat.

Exercise 3.3 — Write — Things dried to remain unspoilt

Q1 What other things are dried so that they remain unspoilt throughout the year?

SOLUTION

Drying removes moisture from food so microbes cannot grow.
Many foods are dried to preserve them: red chillies, coriander seeds, fenugreek leaves (methi), fish, amla (Indian gooseberry), ginger, tamarind, coconut, papad, and various lentils (dals).
In many homes, raw mango is dried to make aam papad or dried mango powder (amchur).

Answer: Red chillies, coriander seeds, methi (fenugreek) leaves, fish, amla, tamarind, papad, and raw mango are dried to keep them unspoilt throughout the year.

Exercise 3.4 — Activity 1 — Mango products

Q1 What items can be made from mangoes to enjoy them for longer durations? Write their names.

SOLUTION

Mangoes can be preserved in several ways to enjoy them longer.

Items that can be made from mangoes: mango pickle (aam ka achar), aam papad (dried mango sheets), mango chutney, mango jam, mango squash or juice, dried mango slices, and mango powder (amchur).

Each method removes moisture or uses oil, spices, sugar, or drying to keep the mango from spoiling.

Answer: Items made from mangoes for longer use: mango pickle, aam papad, mango chutney, mango jam, mango squash, mango powder (amchur), and dried mango slices.

Exercise 3.5 — Let us observe — Tomato drying activity

Q1 Cut a tomato into slices and place them on a tray in sunlight. What changes did you observe in the tomato slices? Can you think of a way to preserve tomatoes?

SOLUTION

Place the tomato slices on a tray near a sunny window and observe over a few days.

Observations: the slices gradually shrink, lose water (moisture), become dry and leathery, and their colour darkens.

This shows that sunlight removes moisture from the tomatoes.

Tomatoes can be preserved by sun-drying them, or by cooking and canning them as tomato puree or sauce, or by making tomato pickle using oil and spices.

Answer: The tomato slices shrink, lose moisture, and become dry and leathery in sunlight. Tomatoes can be preserved by sun-drying them or by making tomato pickle or canned tomato puree.

Exercise 3.6 — Discuss — Pickle without oil

Q1 What would happen to the pickle if no oil had been added?

SOLUTION

Oil forms a layer over the pickle that keeps air out.

If no oil were added, air would reach the pickle, allowing microbes to grow on it.

The pickle would spoil quickly — it would smell bad, change colour, and become unfit to eat.

Answer: Without oil, air would reach the pickle and microbes would grow on it. The pickle would spoil quickly and become unfit to eat.

Exercise 3.7 — Discuss — Butter and ghee refrigeration

Q1 Why does butter need refrigeration but ghee does not?

SOLUTION

Butter contains water (moisture). Microbes can grow in this moisture, so butter spoils quickly at room temperature. Refrigeration slows down the microbes.

Ghee is made by heating butter until all the water evaporates. Without water, microbes cannot grow, so ghee stays good at room temperature without refrigeration.

Answer: Butter contains water (moisture) in which microbes can grow, so it needs refrigeration. Ghee is made by removing all water from butter, so microbes cannot grow in it and it does not need refrigeration.

Exercise 3.8 — Activity 3 — Food preservation practices at home

Q1 Find out about food preservation practices at your family by asking the elders at home. Write at least one such practice.

SOLUTION

Ask your grandparents, parents, or older relatives about traditional ways they preserve food. Examples of practices you might find: drying raw mangoes or chillies in the sun; making pickles with oil, salt, and spices; preparing jams or chutneys with sugar; storing grains with neem leaves to keep away insects; making papad and storing them in airtight containers.

Answer: One common family practice: sun-drying green chillies and storing them as chilli powder that lasts throughout the year. (Ask your elders and write the practice your family follows — answers will vary.)

Exercise 3.9 — How are Idlis made?

Q1 How are idlis made? What makes the idli batter fluffy?

SOLUTION

Idlis are made from a batter of soaked rice and urad dal (black gram) that is ground and left to ferment overnight.

During fermentation, microbes in the air act on the batter and produce gas (carbon dioxide), which makes the batter rise and become fluffy.

This fluffy batter is poured into moulds and steamed to make soft, spongy idlis.

Answer: Idlis are made from fermented rice and urad dal batter. Microbes in the air act on the batter overnight, producing gas that makes it fluffy. The batter is then steamed in moulds to make soft idlis.

Exercise 3.10 — Think — Home remedies for indigestion

Q1 Have you ever had an upset stomach, vomiting, or indigestion? Did you use any home remedies? Write about the home remedy given to you.

SOLUTION

Indigestion or an upset stomach can be caused by eating too much, eating too fast, eating spoiled food, or bad food habits.

A common home remedy is eating plain curd or drinking buttermilk — these contain good microbes that help in digestion.

Other remedies include drinking ginger tea, ajwain (carom seeds) water, or jeera (cumin) water to soothe the stomach.

For severe problems, a doctor should be consulted.

Answer: A common home remedy for an upset stomach is eating curd or drinking buttermilk, which has good microbes that help digestion. Ginger tea or ajwain water also helps. (Personal answers about remedies used at home will vary.)

Exercise 3.11 — Activity 4 — Finding #9 from market visit

Q1 Go with an elder to buy vegetables and fruits. Observe how they select fruits and vegetables. Write one thing you learnt as a Finding #9.

SOLUTION

Accompany an elder (grandparent or parent) to the vegetable market and observe carefully. Elders check fruits and vegetables by pressing them gently (they should be firm, not too soft), looking for bright colour, checking for no bruises or dark spots, and smelling for freshness.
One learning: Fresh fruits and vegetables look bright and feel firm. Damaged or overripe ones have spots, smell different, or feel too soft — these spoil faster.

Answer: Finding #9: Fresh fruits and vegetables should be firm and bright-coloured with no dark spots or bad smell. Buying them fresh ensures they stay good longer and are healthier to eat. (Answers from the personal market trip will vary.)

Exercise 3.12 — Write — Seasonal fruits and vegetables

Q1 Name three seasonal fruits or vegetables of your region. For example, amla in winter and jamun in summer.

SOLUTION

Different regions of India have their own seasonal fruits and vegetables.

Common examples: mango in summer, litchi (lychee) in summer, jamun in summer, amla in winter, guava in winter, peas in winter, and strawberry in winter.

Local and seasonal fruits taste better because they are fresh and do not have to travel long distances.

Answer: Three examples: 1. Mango (summer) 2. Guava (winter) 3. Amla (winter). (Write fruits and vegetables found in your own region — answers will vary.)

Exercise 3.13 — Activity 5 — Teeth and chewing

Q1 Chew each food item properly. Which teeth did you use to cut and chew? Look at the diagram of teeth and name them.

SOLUTION

When we eat, we use different types of teeth for different jobs.
Incisors (front teeth) are used to cut or bite food.
Canines (pointed teeth next to incisors) are used to tear food.
Premolars crush the food into smaller pieces.
Molars (the broad back teeth) grind the food into a fine mush.
Chewing properly mixes saliva with food, which begins digestion.

Answer: Incisors cut food, canines tear it, premolars crush it, and molars grind it. Chewing properly with all these teeth mixes saliva with the food and helps digestion.

Exercise 3.14 — Write — How to avoid choking

Q1 How can you avoid choking?

SOLUTION

Choking happens when food goes into the windpipe instead of the food pipe.
To avoid choking: eat slowly and chew food properly; take small mouthfuls; do not talk, laugh, or run with food in your mouth; sit down while eating.

Answer: To avoid choking: eat slowly, chew food properly, take small mouthfuls, and do not talk or laugh while eating.

Exercise 3.15 — Let us reflect

Q1 Why do some food items last for weeks and others spoil in just a few days?

SOLUTION

Microbes need moisture, air, and warmth to grow and spoil food.

Foods that contain a lot of moisture, like cooked rice or fresh bread, spoil quickly because microbes can grow easily.

Foods that are dry (like biscuits or dried lentils), or those preserved using oil, sugar, salt, or spices, last much longer because moisture or air is kept away from them, so microbes cannot grow.

Answer: Foods with more moisture spoil faster because microbes grow easily in moist conditions. Dry foods or those preserved with oil, salt, sugar, or spices last longer because moisture or air is kept away from microbes.

Q2 You are going on a field trip for two days. List five food items you will carry. How will you keep them from getting spoiled?

SOLUTION

For a two-day field trip, choose foods that are dry, sealed, or preserved so they last without refrigeration.

Five suitable food items: 1. Roti or chapati (wrap tightly in foil or an airtight box), 2. Dry fruits such as raisins or cashews (in a sealed pouch), 3. Biscuits or crackers (sealed packet), 4. Namkeen or roasted chana (sealed pouch), 5. Pickle (in a small airtight jar with oil covering it).

To prevent spoilage: keep food in airtight containers, avoid leaving food open, store away from direct sunlight and heat, and eat fresh food as soon as it is cooked.

Answer: Five food items for a field trip: 1. Chapati (in airtight box), 2. Dry fruits (sealed pouch), 3. Biscuits (sealed packet), 4. Namkeen (sealed pouch), 5. Pickle (airtight jar with oil). Keep all items sealed and away from heat to prevent spoilage.

Q3 What if food cannot be preserved? Imagine a world without food preservation and discuss the consequences.

SOLUTION

Without food preservation, all food would spoil within a day or two of harvesting or cooking.

Farmers would not be able to store their harvest, so a lot of food would be wasted and people would go hungry.

We would have to eat only freshly cooked or freshly harvested food, which would be very difficult in cities far from farms.

There would be no pickles, jams, canned goods, dried foods, or any packaged food items.

People would have no food during droughts, floods, or other seasons when crops do not grow.

Food preservation is therefore very important for health, reducing waste, and ensuring

everyone has enough to eat.

Answer: Without food preservation, food would spoil very quickly and most of it would be wasted. There would be food shortages during floods, droughts, and off-seasons. People in cities far from farms would struggle to get food. Pickles, jams, and stored grains would not exist. Food preservation is essential for reducing waste and ensuring food is available throughout the year.

Q4 Match the following: Which method is used to preserve the food item (A) to make the final product (B)?
Item (A): Roti, Papad, Mango, Lemon, Butter, Juice, Chillies, Fish
Products (B): Khakhra, Dried papads, Aam papad, Lemon pickle, Ghee, Canned juice, Chilli powder, Dried fish
(The Methods of Preservation column is to be filled in by students using chapter concepts: Dehydration and Dried in sun are given as examples.)

SOLUTION

Roti — Dehydration — Khakhra (roti is dried flat and crisp by dehydration)
Papad — Dried in sun — Dried papads
Mango — Dried in sun — Aam papad (raw mango is sun-dried into aam papad sheets)
Lemon — Pickling with oil and spices — Lemon pickle
Butter — Heating to remove water — Ghee
Juice — Canning in airtight packaging — Canned juice
Chillies — Dried in sun — Chilli powder
Fish — Dried in sun — Dried fish

Answer: Roti → Dehydration → Khakhra | Papad → Dried in sun → Dried papads | Mango → Dried in sun → Aam papad | Lemon → Pickling → Lemon pickle | Butter → Heating (removing water) → Ghee | Juice → Canning → Canned juice | Chillies → Dried in sun → Chilli powder | Fish → Dried in sun → Dried fish