JSR IAS ACADEMY

GENERAL SCIENCE

CHEMISTRY

Food Adulterants

Food Adulteration

Adulteration is defined as the **addition or subtraction of any substance to or from food**

Some of the common adulterated foods are milk and milk products, cereals, pulses, coffee powder, tea powder, turmeric powder, saffron, confectionary, non-alcoholic beverages, spices, edible oils, meat, poultry products etc.

The adulterants in food can be classified in **three categories:**

1. Natural adulterants

Natural adulterants are those **chemicals or organic compounds that are naturally present in food.**

e.g.

- toxic substances in certain poisonous mushrooms,
- Prussic acid in seeds of apples and cherry,
- marine toxins,
- fish oil poisoning,
- environmental contaminants

2. Incidental/unintentionally added adulterants

- Pesticide residues
- Droppings of rodents, insects, rodent bites and larva in food during its storage
- Microbial contamination due to the presence of pathogens like Escherichia coli, Salmonella in fruits, vegetables, ready-to-eat meat and poultry products

3. Intentionally added adulterants

These adulterants are **added intentionally for financial gain and have serious impact on the health of the consumers.**

a. Additives and preservatives **like vinegar, citric acid, sodium bicarbonate (baking soda), hydrogen peroxide** in milk, modified food starch, food flavours, synthetic preservatives and artificial sweeteners.

b. Chemicals like **calcium carbide** to ripen bananas and mangoes.

c. Non certified food colours containing chemicals like **metallic lead** are used to give colours to vegetables

d. Edible synthetic wax like **shellac or carnauba wax** is coated on fruits like apple, pear to give a shining appearance.

Food Quality Control

- 1954, Prevention of Food Adulteration Act
- Prevention of Food Adulteration Rules in 1955

Food Quality Control Agencies

ISI, AGMARK, FPO, FCI and other health departments enforce minimum standards for the consumer products.

FCI (Food Corporation of India) was set up in the year 1965

ISI	ISI - (Indian Standards Institution) known as Bureau of Indian Standard (BIS)	Certifies industrial products like electrical appliances like switches, wiring cables, water heater, electric motor, kitchen appliances etc.
AGMARK	AGMARK - (Agricultural Marking)	Certifies agricultural and livestock products like cereals, essential oils, pulses, honey, butter etc.
FPO	FPO - (Fruit Process Order)	Certifies the fruit products like juice, jams, sauce, canned fruits and vegetables, pickles etc.
fssai	Food Safety and Standards Authority of India	Responsible for protecting and promoting the public health through regulation and supervision of food safety.

1. Milk: Place a drop of milk on a slanting polished surface. Pure milk flows slowly leaving a trail behind while the milk adulterated with water will flow fast without leaving a trail.
2. Honey: Dip a cotton wick in honey and light it with a match stick. Pure honey burns while adulterated honey with sugar solution gives a cracking sound.
3. Sugar: Dissolve sugar in water. If chalk powder is added as an adulterant, it will settle down.
4. Coffee powder: Sprinkle a few pinches of coffee powder in a glass of water. Coffee powder floats. If it is adulterated with tamarind powder it settles down.
5. Food grains: They have visible adulterants like marble, sand grit, stones, etc. These are removed by sorting, hand picking, washing etc.

Type of additive	Function of the additive	Example
Preservatives	They protect food from spoilage by microorganism in storage.	Vinegar, Sodium benzoate, benzoic acid, sodium nitrite
Colourants	They give pleasant colours to food	Carotenoids, Anthocyanin, Curcumin
Artificial Sweeteners	They add sweet taste to food	Saccharin, Cyclamate
Flavor enhancers	They are used to enhance the flavour of food items	Monosodium glutamate, Calcium diglutamate
Antioxidants	They prevent the oxidation of food. They protect us against cardiovascular disease.	Vitamin C, Vitamin E, Carotene

A slogan **From farm to plate, make food safe** was raised on World Health Day (7th April 2015) to promote and improve food safety.

October 16th is World Food Day. It emphasizes on food safety and avoiding food wastage.