Food Adulteration – A Rising Problem

Definition : Food adulteration is the process in which the quality of food is lowered either by the addition of inferior quality material or by extraction of valuable ingredient. It not only includes the intentional addition or substitution of the substances but biological and chemical contamination during the period of growth, storage, processing, transport and distribution of the food products, is also responsible for the lowering or degradation of the quality of food products. Adulterants are those substances which are used for making the food products unsafe for human consumption.

A Food Item Is Said to Be Adulterated If……

- A substance which is added is injurious for human consumption.
- An inferior substance substitutes wholly or partly.
- A valuable ingredient has been abstracted from the food product, wholly or in part.

Reasons Of Food Adulteration :

- To get more profit.
- To increase the weight, adulterant is added.
- To increase volume of trade by showing lower prices.

Various Types of Adulterants Found In Food Products :

- Intentional adulterants; like coloring agents, starch, Pepperoni, injectable dyes, sand, marble chips, chalk powder etc.
- Incidental adulterants; like pesticide residues, larvae in foods, droppings of rodents.
- Metallic contaminants; like lead, arsenic, effluent from chemical industries etc.

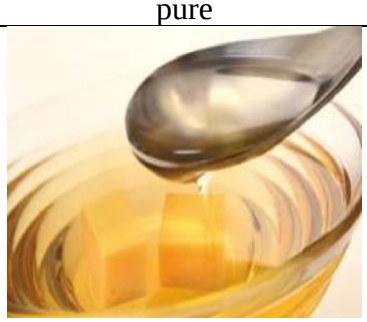
Some Adulterated Foods In Market And Health Hazards :

	**Turmeric, Dals And Pulses**
	▪ **Adulterant** : Metanil Yellow, Khesari Dal ▪ **Health Issues** : Highly carcinogenic, stomach disorders.
	**Ice cream**
	▪ **Adulterant** **:**Pepperoni, Ethyl acetate, Butyraldehyde, washing powder, Nitrate ▪ **Health Issues** **:** Pepperoni is used as a pesticide and ethyl acetate causes disease affecting lungs, kidneys and heart.

	**Green Chillies, green peas, and other vegetables** ▪ **Adulterants :** Malachite green, Argemone seeds ▪ **Health Issues :** Carcinogenic if consumed over a long period of time.
	**Milk and condensed milk, paneer, khoya** ▪ **Adulterants :** Detergent Powder, starch , water ▪ **Health Issues :** Stomach Disorders.
	**Mustards seeds and mustard oil** ▪ **Adulterants :** Argrmone seeds, Papaya seed ▪ **Health Issues :** Epidemic Dropsy and severe Glaucoma.

DART (Detect Adulteration With Rapid Test) :

Testing Method	Pure Sample	Adulterated Sample
❖ **Detection of detergent in milk**: 1. Take 5 to 10ml of sample with an equal amount of water. 2. Shake the contents thoroughly. 3. If milk is adulterated with detergent, it forms dense lather. 4. Pure milk will form very thin foam layer due to agitation	 pure	 adulterated
❖ **Detection of starch in milk and milk product :** 1. Boil 2-3 ml of sample with 5ml of water. 2. Cool and add 2-3 drops of tincture of iodine. 3. Formation of blue colour indicates the presence of starch.	 pure	 adulterated

❖ **Detection of Malachite green in green vegetables :** 1. Take a cotton piece soaked in water or vegetable oil. (conduct the test separately). 2. Rub the outer green surface of a small part of green vegetable/chilli. 3. If the cotton turns green, then it is adulterated with malachite green.	 pure	 adulterated
❖ **Detection of TOCP (tri-ortho-cresyl-phosphate) in oil and fat** : 1. Take 2ml of sample of oil. 2. Add on a little amount of yellow butter (Solid). 3. Immediate formation of red colour indicates the presence of TOCP.	 pure	 adulterated
❖ **Differentiation of common salt and iodised salt :** 1. Cut a piece of potato, add salt and wait for a minute. 2. Add two drops of lemon juice. 3. If it is iodised salt, blue colour will develop. 4. In the case of common salt, there will be no blue colour.	 Iodised salt	 Common salt
❖ **Detection of artificial colours in turmeric powder :** 1. Add a teaspoon of turmeric powder in a glass of water. 2. Natural turmeric powder leaves light yellow colour while settling down. 3. Adulterated turmeric powder will leave a strong yellow colour in water while settling down.	 pure	 adulterated