

Adulteration in Food

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Good food is important for a healthy life. The food we eat should not only be balanced but also clean. Except for some vegetables and fruits most of the foods we consume are either processed or preserved. Post-harvest technology implemented to preserve food from spoilage makes lot of difference. Food and food products pass through many stages before reaching the hands of consumers. During processing technological interventions like addition of chemicals, artificial colors, thickening agents, stabilizers, additives and taste makers may be added or any other substance may be added. By the time food reaches the retail market, it loses its original shape, flavor and taste. Besides, any marketer measures a dish in terms of profit and not in the interest of consumer's health. Consumers also go for the price, packaging and advertisements while buying any food item more than for health reasons. Sometimes food is adulterated knowingly or unknowingly or undetected. It is essential for us to know about this as consumers we should be aware and protect ourselves and our children from the ill effects of consuming adulterated food.

So, what is food adulteration?

Food adulteration is the intentional addition of a substitute or the removal of a valuable ingredient from any food, thereby compromising the original taste and quality of the food. Adulteration can be deliberate or inadvertent as deliberate adulteration is done to maximize profits. When food becomes contaminated, it can happen at any stage of food processing, be it through inadvertence or lack of proper handling.

According to (Prevention of Food Adulteration Act. Food and Drug Administration Act 1954) the grounds for calling adulterated food are as follows.

1. If any food item is impure
2. If there is a poisonous substance in the food item
3. If inferior substitutes are added to the food item

4. If a valuable element is removed from the food
5. If the food is prepared in a contaminated environment
6. If there are lot of worms or insects in the food
7. If food is taken from diseased animals
8. If the food contains non-permissible dyes
9. If the container in which the food is stored is made of any toxic material
10. If adulterated preservatives are found in the food or permitted preservatives are present in excess
11. Violation of standards prescribed under the above Act

If any of the above grounds are found, we can lodge a complaint with the authorities concerned. This Act came into force on 1st June 1955. It was again amended in 1968 and 1973. Any such amendment shall be made by the Central Committee or Food Standards.

Similarly, we can categorize the harmful substances like this

1. Deliberate adulteration
2. Minerals found in food items
3. Finding worms
4. If pesticide residue remains
5. If toxic chemicals are added during packing

Health problems caused by deliberate mixing

1. Grains and spices - In grains and spices we find ash, pieces of iron and small stones. When these enter our stomach, they damage the delicate lining of the stomach.

2. Talc stone powder and lime powder -Wheat flour is mixed with talcum stone powder and lime powder. As talcum powder contains silicate, it damages the delicate lining of the stomach. Lime is added to dry ginger. Salt is added to pickles and spices to increase weight.

3. Starch flour i.e. starch is mixed with the ingredients prepared from khawa. Although it does not harm the human health, the quality of the sweets we buy decreases. Besides, color is often added to sweets. Paints and dyes contain lead chromate which is harmful to health.

4. Cyclamates and Additives - Sugar and sugar-like chemicals are added to honey. It does not harm health but reduces purity. Artificial sweeteners like Cyclamates and Additives are added. Too much of these are not good for health. Sometimes the fruit is injected with saccharin to sweeten it. Additives are also used to add color, flavor, processing, detoxification, foaming, to preserve food for a long time. These should be consumed in moderation. Excessive consumption is not good.

5. Asbestos - Asbestos fibers are used to purify soft drinks and fruit juices. If these particles are added excessively in the body, there is a possibility of cancer.

6. Mineral oil is mixed in cooking oil. Mineral oil is cheaper than cooking oil and is mixed in cooking oil. By consuming it, vitamin A is not available to the body.

7. Argemone seeds are mixed with mustard seeds and Argemon oil is added in cooking oil. Its regular consumption causes swelling and small fever blisters on the skin. A long-term effect is to invite cancer. Apart from this, cotton seed oil, used meter oil, linseed oil are mixed in coconut oil and sesame oil.

8. Kesari Dhal: Kesari Dal is similar to Tur Dhal. It is mostly used in Madhya Pradesh, Uttar Pradesh, Bihar and West Bengal. As it grows like a weed, it is a very cheap legume. It is added with chickpea flour. When it is consumed in excess, a disease called lathyrism occurs. It causes numbness in the legs when excessive.

9. Addition of foreign substances to the foodstuff. Seeds of a wild grass similar to cumin are added. Dried papaya seeds are added to the black pepper. Tamarind seed powder and date seed powder are added along with coffee powder. Casia flakes are added to cinnamon. Saw dust powder is added to tea powder and added. Glue is added to the asfoetida.

10. Toxic colors are commonly added in already made food items. Colors are added to attract children and enhance the taste of food items. Colours are mainly added to ice creams, milk products, biscuits, chocolates, candies, pastries, fruit products, processed vegetables, jellies, soups and soft drinks. Lead Chromate, Metanil Yellow, Rhodamine B, Orange 1&11. These colors are usually added to all the sweets available in the shops. Its excessive consumption can cause damage to bones, eyes, skin, lungs and cause mental retardation and anemia in children. Mixed colors found in various foods are Metanil Yellow - ice candy, phaluda, ice cream and pulses.

Orange 11- Halwa

Rodamine B - Red chilli powder

Blue VR S - Churan Sweets

Armine -Fennel seeds and Supari

Melachite Green - sweet snacks and peas

Small tests that can be done to detect adulteration in food

1. Pulses: 5 grams of pulses are mixed with 5 ml of water to test presence of metanil yellow content in pulses. A couple of drops of hydrochloric acid should be added to the water, if metanil yellow is present the solution will turn pink.
2. Kesari dal is mixed with tur dal and can be easily identified in Tur Dal as the shape is slightly different.
3. Iron filings in semolina When semolina is placed on a plate and a magnet is passed over semolina, the iron filings stick to the magnet.
4. Porridge flour is often added to milk and milk products. To check this, add a drop of iodine solution to milk or milk products. If there is starch the milk turns blue.
5. To know the addition of lime powder in wheat flour, wheat flour is mixed with dilute hydrochloric acid, if lime powder is present, it will foam.
6. To detect the inclusion of papaya seeds in the black pepper, immerse the seeds in Carbon Tetra Chloride. Papaya seeds will float and black pepper seeds will sink.

7. Dry dung is added to coriander seed powder or coriander powder. When coriander powder is added to water the dung floats on top and the coriander powder settles down.
8. To detect artificial color in tea powder, sprinkle tea powder on a piece of wet blotting paper, the blotting paper will get colour if tea is adulterated
9. If hydrochloric acid is added to jaggery and it turns red, it means metanil yellow is present
10. When hing is put in water if there is no impurity it melts and becomes like milk.

An important point emerges when examining the above issues. The food we eat should be clean and devoid of impurities and adulterants. But sometimes we cannot avoid eating impure food, so we should include foods which contain lot of fibre. Apart from that, we should process and consume food only when necessary. A clean diet should focus on maintaining good health. As our forefathers said, health is a blessing, it can be maintained only by eating clean and healthy food.

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