



## **UNIT – 7 FOOD CONTAMINATION & FOOD ADULTERATION**

Food adulteration of food stuff is commonly practiced in India by the trader.

Adulteration defined as the process by which the quality or the nature of a given substance is reduced to

1. The addition of a foreign or an inferior substance.
2. The removal of vital element.

### **TYPE OF ADULTERANT**

Adulterants may be intentional or unintentional. The former is a willful act on the part of the adulterator intended to increase the margin of profit.

Incidental contamination is usually due to ignorance negligence or lack of proper facilities.

### **INTENTIONAL ADULTERANTS**

Intentional adulterants are sand, marble, drip, stone, mud, chalk powder, water, mineral oil and coal tar, die the adulterants cause harmful effects on the body.

#### **1. Milk**

A 2012 study conducted by the FSSAI across 33 states found that milk in India was adulterated with diluted water, detergent, fat and even urea.

Some of the adulterants that are used in milk are water, chalk, urea, caustic soda and skimmed milk, while Khoya is adulterated with paper, refined oil and skimmed milk powder.

The level of adulteration in milk is dangerous to so many levels and has the highest chance of causing stomach disorders.

#### **2. Tea/Coffee**

Source – IHM Notes



Tea and coffee are two most used beverages in India, and thus highly adulterated. Tea leaves are usually adulterated with same coloured leaves, some might not even be edible. Several cases of liver infection across the country have been reported due to consuming adulterated tea.

Coffee seeds, on the other hand are adulterated with tamarind seeds, mustard seeds and also chicori. These adulterants are the main cause of diarrhoea.

### **3. Wheat and other food grains**

Everybody knows that wheat is very commonly adulterated with ergot, a fungus containing poisonous substances and is extremely injurious to health.

### **4. Vegetables**

Beware of the shiny vegetables! Yes, adulteration of vegetables is in news for quite sometime now. Different coloured and textured vegetables are often coloured with different dyes and substances. These vegetables are mostly adulterated with malachite green, a chemical dye which is known to have carcinogenic.

Common adulterants in fruits and vegetables are oxytocin sachharin, wax, calcium carbide and copper sulphate.

### **5. Sweets**

Do you get Indian sweets covered with a silver foil during Diwali? According to Indian regulations, silver must be 99.9 per cent pure if it is used as a food ingredient.

However, with silver becoming expensive many sweet shop owners use silver vark that could contain aluminium. The most common ingredients in making these sweets are khoya and chenna and they're often adulterated with starch. But the good news is that you can test if the sweets are adulterated by boiling a small sample in water, cool it then add a few drops of iodine solution.

A blue color indicates the presence of starch. Also, sugar used in making these sweets might be adulterated with tar dye which only makes it worse.

### **6. Honey**

There are so many varieties of honey available in the market, but due to its steep price, honey is commonly adulterated with molasses sugar to increase the bottle quantity.

According to a study carried out by the Centre for Science and Environment, most honey brands being sold in the country contain varying amounts of antibiotics and their consumption over time could induce resistance to antibiotics, lead to blood-related disorders and injury to the liver.

### **7. Dal**

The most commonly adulterated dal is arhar dal and is usually adulterated with metanil yellow. Metanil yellow is a principal non-permitted food colour used extensively in India. The



effect of long-term consumption of metanil yellow on the developing and adult brain causes neurotoxicity.

Neurotoxicity occurs when the exposure to natural or artificial toxic substances, alters the normal activity of the nervous system in such a way as to cause damage to the nervous tissue. Metanil yellow is used in dal as an adulterant for colouring. Its presence can be tested in dal by adding a few drops of HCl to a test sample, if the solution turns pink in colour, it indicates the presence of metanil yellow.

### **8. Spices**

Recently, a major Indian supplier was caught and had to destroy tons of turmeric for dangerous adulteration using metanil yellow and red oxide of lead - the later being highly carcinogenic.

Soap stone or other earthy material and foreign resin are the common adulterants used in Asafoetida. Papaya seeds, black berries are the common adulterants used in black pepper as they are almost similar in size but tasteless (sometimes bitter). Red chilli powder is adulterated with brick powder, salt powder or talc powder and artificial colours like Sudan Red.

The most expensive spice in the world. Saffron is adulterated by coloured dried tendrils of maize cob.

### **9. Butter and cream**

Butter can be diluted with water or partially replaced with cheaper plant oils such as palm oil, sunflower oil and soybean oil. This increases the profits derived from a given volume of milk.

### **10. Ice cream**

Most common adulterants in ice cream are pepperoni, ethyl acetate, butyraldehyde, emulsi acetate, nitrate, washing powder etc are not less than poison. Pepperoni is used as a pesticide and ethyl acetate causes terrible diseases affecting lungs, kidneys and heart.

Ice cream is manufactured in extremely cold chamber where fat is hardened and several harmful substances are added. Also a kind of gum is added which is sticky and slow melting. This gum is obtained by boiling animal parts like tail, the nose, the udder etc.