

## Food Adulteration

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Food is adulterated to increase the quantity and to make more profit. The food is sucked of its nutrients and the place where the food is grown, often contaminated. For e.g.: Milk is mixed with water, Vanaspati is used as adulterant for ghee, Ergot is used as an adulterant for cereals, Chalk powder is used as an adulterant for flour, Chicory is used as an adulterant for coffee, Papaya seeds are used as an adulterant for pepper, Brick powder is used as an adulterant for chillypowder, Wood is used as an adulterant for turmeric and dhaniya powder.

### What is adulteration?

An adulterant is a chemical substance which should not be contained within other substances (e.g.:foods, beverages and fuels) for legal or other reasons. The addition of adulterants is called adulteration.

The word is appropriate only when the additions are unwanted by the recipient. Otherwise the expression would be food additive. Adulterants when used in illicit drugs are called cutting agents, while deliberate addition of toxic adulterants to food or other

products for human consumption is known as poisoning.

### Adulteration in milk and milk products:

#### Paneer, Khoa, Condensed milk and Milk:

Here adulterant is starch (used to give it thick, rich texture). Its harmful effect is that it is unhygienic, unprocessed water and starch can cause stomach disorders. Starch greatly reduces the nutritive value of the ingredients.

**Ice cream:** Here the adulterants pepperoni, ethylacetate, butraldehyde, emilacetate, nitrate, washing powder, etc are not less than poison. Pepperoni is used as 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, nose and udder, etc.

In 2012, a study in India conducted by the Food Safety Standards Authority of India (FSSAI) across 23 states found milk in India is adulterated with detergent, fat and even urea,

as well diluted with water. Of the 1791 random samples from 23 states, just 31.5% of the samples tested (565) conformed to the FSSAI standards while the rest 1226 (68.4%) failed the test. See: 2012 India milk adulterant scandal.

### **Adulteration incereals, grains and spices:**

**Turmeric, Dals and pulses such as Moong or Chana:** Here adulterant is Metanil Yellow and Kesari dal (added to enhance the yellow colour of a food substance). It is highly carcinogenic and if consumed over a continuous period of time, can also causes stomach disorders.

**Mustard seeds and mustard oil:** Here adulterant is Argemone seeds (used to add bulk and weight) and papaya seeds (used to add bulk).The consumption of these can causes epidemic dropsy and several glaucoma. Young children and senior citizens with poor immunity are more susceptible to this.

**Black pepper:** Here adulterant is papaya seeds (used to add bulk). Its harmful effect is that papaya seeds can accuse severe liver problem and stomach disorders.

Water that has been adequately chlorinated, by using the minimum recommended water treatment standard

**Green chillies, green peas and other vegetables:** Here the adulterant Malachite Green (to accentuate the bright, glowing green colour of the vegetables)is a coloured dye that has proven to be carcinogenic for humans if consumed over a longer period of time and Argemones seeds (used to add bulk and weight) .

**Coffee powder:** Here adulterant is tamarind seeds and chicory powder (used to add colour and bulk).Their harmful effects are that these can cause diarrhoea, stomach disorders, giddiness and joint pains.

Food preservatives have a very extensive use, which often constitutes adulteration. Salt is the classic preservative but is seldom classified as adulterant. Salicylic, benjoic and boric acids, and their sodium salts, formaldehyde, ammonium fluoride, sulphurous acid and their salts are among the principle preservatives. Many of these appear to be innocuous, but there is danger that the continued use of food preserved by these agents may be injurious. Some preservatives have been conclusively seen to be injurious when used for long period.

### **Adulteration in water:**

provide protection against viral and bacterial waterborne diseases. However, chlorine treatment alone, as used in the

routine disinfection of water, might not kill some enteric viruses and the parasitic organisms but causes giardiasis, amoebiasis and cryptosporidiosis. In areas where chlorinated tap water is not available or where hygiene and sanitation are poor, one is advised that only the following might be safe to drink: Beverages, such as tea and coffee, made with boiled water

The safety of canned or bottled carbonated beverages, including carbonated bottled water and soft drinks is questionable nowadays. Where water might be contaminated, one is advised that ice should also be considered contaminated and should not be used in beverages. If ice has been in contact with containers used for drinking, one should thoroughly clean the containers, preferably with soap and hot water, after the ice has been discarded.

**Table: Common Food Adulterants**

| <b>Foodstuffs</b>             | <b>Common adulterants</b>  |
|-------------------------------|--|
| Milk and milk products        | Water, removal of butter and addition of refined oil                         |
| Milk, liquid                  | Fat, addition of skimmed milk reconstituted from skimmed milk powder         |
| Milk powder                   | Starch, Dextrins   |
| Cream                         | Other fats   |
| Ice cream                     | Non-permitted colours, artificial sweetners, other fats and gelling agents   |
| Butter                        | Other fats   |
| Ghee                          | hydrogenated fats  |
| Vanaspati                     | Animal fats and other high melting fats                                      |
| Vegetable oil                 | Argemone seeds, mineral oil, orthotricresyl phosphate, cheap non-edible oils |
| <b>Species and Condiments</b> |  |
| Whole turmeric                | Coating of lead chromate or coal tar dyes                                    |
| Turmeric Powder               | Coal tar colour, yellow earth, starch or talc coloured yellow by coal dye    |
| Curry powder                  | Starch coloured brown by coal tar dyes<br>Other seed coloured dyes           |
| Coriander seeds               | Powdered bran or sawdust coloured green with dye                             |
| Coriander seeds powder        | Starch coloured red by coal tar dye  |
| Chilli powder                 | Argemone seeds   |

|  |  |
|--|--|
| Mustard                                  | Artificial jeera like product  |
| Cumin                                    | Dried papaya seeds   |
| Black pepper                             | Resins and other plant gums  |
| <b>Cereals</b>                           |  |
| Wheat and rice                           | Stones   |
| Wheat flour                              | Tapioca flour, talc  |
| Semolina                                 | Tapioca semolina   |
| <b>Pulses</b>                            |  |
| Bengal gram dal                          | Kesari dal (Lathyrussativus)   |
| Red gram dal                             | Coloured yellow with coal tar dye  |
| Bengal gram flour                        | Tapioca flour as starch, coloured yellow with dye                          |
| <b>Sweetening agents and soft drinks</b> |  |
| Honey                                    | Coloured cane sugar syrup  |
| Soft Drinks                              | Artificial sweeteners (saccharin)  |
| <b>Beverages</b>                         |  |
| Coffee powder                            | Exhausted coffee powder, roasted husk or date seed or tamarind seed powder |
| Tea                                      | Other leaves with added colour, exhausted tea leaves                       |
| <b>Miscellaneous</b>                     |  |
| Processed arecanut (supari)              | Other seeds or nuts, broken or coloured                                    |
|  |  |

### **Procedure for sampling and analysis:**

Any food Inspector can enter and inspect any place where any article of food is manufactured or stored for sale or stored for the manufacture of any other article of food for sale or exposed or exhibited for sale or where any adulterant is

manufactured or kept and take samples of such article of food or adulterant for analysis. Notice will be issued by the Inspector in writing then and there to the seller indicating his intention. Three samples are taken and the signature of the seller is affixed to them. One sample is sent for analysis to Public Analyst under intimation to the Local Health Authority

## Appeal to people

**HEALTH IS PRECIOUS  
IT IS IN YOUR HANDS.**  
Always look for label before every purchase

**APPEAL TO CONSUMERS**

1. Purchase powdered spices and mustard oil in sealed package only.
2. Ask the vendors about the type of edible colour, edible oil or ghee used while purchasing sweets and other food preparations.
3. Before purchasing food articles in packages check "date of manufacturing" and "best before date" on the packages.
4. Packaged water / Mineral water must have the Bureau of Indian Standards certification mark (ISI).
5. While purchasing food items, consumer should see Green symbol for Vegetarian & Brown symbol for Non-Vegetarian items.
6. Fruits /Vegetables / Pulses should be properly washed, before use so that artificial colour or pesticides if any, which are injurious to health are washed before use.
7. Do not purchase uncovered cut fruits.
8. Never use stale food items.
9. You can also draw sample of food article yourself under the supervision of LHA/SDM, as a purchaser or consumer and get the same analysed on payment of prescribed fee from Govt. Laboratory.

You can complain against the vendors selling adulterated sweets / food items to Area SDMs or at Department of Prevention of Food Adulteration or on website of the department  
<http://pfa.delhigovt.nic.in> or Control Room Ph. No. 27195860. Action shall be taken immediately.

Commissioner of Food Safety / Director (PFA), Delhi Ph. 27194858

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## Food Standards in India

To check the adulteration in food and food products, the most important food standards in India are:

**The PFA Standards:** These lay down the minimum standards for all types of foods, and are revised periodically to meet the requirements of the manufacturer and the customer. The PFA Standards; first formulated in 1955 were subsequently revised in 1968, 1973 and 1981. Any food not

conforming to these standards is said to be adulterated.

In 1989, the Department of Prevention of Food Adulteration picked up 522 samples of spices and condiments out of which 100 samples (19 per cent) were found adulterated. Prosecution was launched against the traders.

The Penalty for adulteration that is injurious to health involves a minimum punishment of one year in jail and a fine of Rs 2000, extendable to six

years and a higher fine as fixed by the court. Adulteration which is not injurious to health is punishable by six months in jail and a fine of Rs 1000, extendable to 3 years and a maximum fine as decided by the court.

Consumers can also take samples from shops and file complaints to the consumer forums established under the Consumer Protection Act (CPA), if they get adulterated goods. In addition, the PFA department can be contacted on the phone.

**FPO Standards:** The Fruit Products Order (FPO), passed in 1946 under the defence of India Rules, was revised under the essential commodities Act, 1955. FPO standards are mainly concerned with the standards required for maintain the quality of fruits and vegetables, and any products manufactured from them. The Fruit Product Order also specifies the conditions of hygiene and sanitation required to be maintained by the manufacturers of fruit and vegetable products. In addition, the specifications for labelling and packaging of these products have been laid down. Under the Fruit Product Order, it is necessary for manufacturers to get a license for the manufacture and sale of fruit and vegetable products. The license is

only issued if the conditions of manufacturer and the quality of the products conform to the standards laid down by the order.

**The Agmark Standards:** These standards are formulated on the physical and chemical characteristics of food, both the natural as well as those acquired during processing. Products graded under 'AGMARK' include vegetable oils, ghee, cream, butter, rice, gur, eggs, groundnuts, potatoes, fruits, pulses, and spices. These standards ensure accurate weights and correct selling practices.

**Indian Standards:** These standards over vegetables and fruit products, spices, meat products, condiments and processed foods such as biscuits, sweets, flours, texturized soya products, tea, coffee and other beverages, and so on. These standards were setup by the Indian Standards Institution; whose certification mark is ISI, seen on all products indicating conformity to the laid down standards. The ISI (now BIS) is the national organisation for standardization and laid down the criteria for the standardization of products, materials, practices and processes. It is also involved in the standardization of items like building materials, safety standards for equipment, etc. which the

caterer must be aware of when decisions regarding premises and equipment are required to be taken.

Certification marks stamped on packages of foods and food products whether they be ISI, FPO or AGMARK or any internationally recognized seal of quality help the consumer of the products to buy foods with confidence.

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