

What's in your food???

SIMPLE TESTS TO FIND OUT!



Simple home tests to detect food adulteration

Vigilant consumers vital to curb adulteration and ensure safe food for all

Detergent in milk. Chalk powder in sugar. Iron filings in tea. Clay in coffee powder. Isn't that enough to make your morning beverage a dangerous proposition? Not to mention your breakfast, lunch and dinner. That's because you may just find papaya seeds in your pepper grinder, sawdust in your bottle of cumin powder and artificial colours on the fruits and vegetables you have picked so carefully at the greengrocer's.



These are just a few examples of food adulteration that the Indian consumer faces in everyday life. With the aim to raise consumer awareness on adulteration and food safety, the Food Safety and Standards Authority of India (FSSAI) has released a manual. The book *Detect Adulteration with Rapid Test (DART)* lists easy to do, inexpensive tests that can be done at home to quickly detect adulterants in common food items.

How food gets adulterated:

Adulteration of food is defined as the addition or subtraction of any substance to or from food, so that the natural composition and quality of the food is affected. Adulteration can be intentional (done for economic gain) or unintentional. Two examples of intentional adulteration are applying food colouring on the surface of fresh fruits to conceal defects and adding stones to rice to add to the weight. Intentional adulterants include sand, mud, stones, chalk powder, boric powder, water, mineral oil and harmful colour.



Unintentional adulteration may occur due to contamination usually due to improper storage. But contamination can also take place during the period of growth, harvesting, processing, transport and distribution. Incidental adulterants include pesticide residues, rodent droppings, insects and larvae. In addition, metallic contaminants like arsenic, lead and tin (from cans) as well as foreign matter such as glass, plastic or wood pieces can be present in food.

Grahak Sathi test reports:

Grahak Sathi has tested food products in its in-house laboratory and detected adulteration. Two out of 15 samples of red chili powder were infested with insects. Five samples of groundnut oil out of 15 were adulterated with palmolein while seven samples were adulterated with cottonseed oil. Both palmolein and cottonseed oil are much cheaper than groundnut oil. Our tests of dairy products found 50% of ghee samples and 60% of khoya samples adulterated with vanaspati (vegetable oil) or starch. In all these cases, apart from facing health risks, the consumer did not get value for money.



Easy tests to check for food adulteration

Sr no.	Product	Test	Result
I. Milk and Milk Products			
1.	Milk	Put a drop of milk on polished slanting surface.	Pure milk either stays or flows slowly leaving a white trail behind. Milk adulterated with water will flow immediately without leaving a mark.
2.	Ghee/ Butter	Take half a teaspoon of ghee/butter in a glass bowl. Add 2 to 3 drops of tincture of iodine.	If the mixture turns blue it confirms the presence of mashed potato/sweet potato or some other starchy substance.
3.	Ice cream	Put some lemon juice on the ice-cream.	If you see bubbles, it indicates the presence of washing powder.
II. Edible Oils			
1.	Coconut oil	Take a small quantity of coconut oil in a glass and put it in the fridge (not the Freezer) for 30 minutes.	You will observe that it solidifies. If it is adulterated, the other oils will be visible as a separate layer on the surface.
III. Spices			
1.	Black Pepper	Add some whole black pepper to a glass of water.	The pure black pepper will settle at the bottom while the papaya seeds will float on the surface.
2.	Asafoetida	Share a little portion of the sample in a glass of water and allow it to settle.	If the asafoetida is adulterated, the soapstone will settle at the bottom.
3.	Red chili powder	Take a teaspoon of chili powder in a glass of water and examine the residue. Rub the residue between your fingers.	If it feels grainy it indicates the presence of brick powder or sand.
4.	Turmeric	Soak whole turmeric in water.	If adulterated, the water will turn a bright yellow colour indicating the presence of lead chromate.
5.	Powdered spices	Take a glass of water and sprinkle the powdered spice on the water.	If adulterated, the sawdust will float on the surface.
6.	Cinnamon	Take a small quantity of the sample in a glass plate and examine it closely.	Cassia bark comprises of several layers with the outer layers, rough and the innermost smooth. Cinnamon bark, apart from the distinct smell, is very thin and can be rolled around a pencil or pen.
7.	Cumin	Rub a small amount of cumin seeds in your palms.	If the palms turn black it indicates the presence of grass seeds coloured with charcoal dust.

8.	Mustard	Take a small quantity of the sample in a glass plate and examine it closely.	Mustard seeds have a smooth surface and when pressed are yellow inside. Argemone seeds have a rough, grainy surface and when pressed are white inside.
9.	Saffron	Try breaking the saffron strands. Take a glass of water and add a small quantity of saffron.	Genuine saffron will not break so easily. If the water gets coloured the saffron is not pure. Artificial saffron is prepared by soaking maize cob in sugar syrup and colouring it with coal tar. The artificial colour will dissolve in the water rapidly.

IV. Food grains and pulses

1.	Food grains	Put some grains in a glass which has 20% salt solution (20 g of salt in 100 ml of water) You can also spot the fungus by observation.	The grains will settle down while the ergot (a poisonous fungus) will float on the surface. Purple-black longer grains indicate the presence of ergot.
2.	Pulses	Take a small quantity of the pulse in a glass plate and examine it closely.	You will be able to spot inedible Datura seeds which are flat with edges and brownish-black in color.
3.	Wheat flour/sooji/maida	Take a small quantity of sample in a glass plate. Move a magnet through the flour.	If the flour is adulterated you will see the iron filings attached to the magnet.

V. Fruits and Vegetables

1.	Apples	Scratch the surface of the apple with a knife.	You will see the wax coming off if the fruit has been polished wax.
2.	Green Chilies and other green vegetables	Take a piece of cotton soaked in vegetable oil. Rub the outer surface of the vegetable.	If the cotton turns green there is adulteration with artificial colour malachite green.

VI. Miscellaneous

1.	Sugar/salt	Take water in glass and dissolve 10 g of the sample in it.	If there is white sediment it is usually chalk powder.
2.	Iodised salt	Cut a piece of potato, add salt and wait for a minute. Add two drops of lemon juice.	If it is iodised salt, a blue colour will be seen.
3.	Sweets	Taste a small quantity of the sample.	An artificial sweetener leaves a lingering sweetness on the tongue and a bitter aftertaste.

4.	Honey	Take a cotton wick and dip it in the honey.	Pure honey burns when ignited with a matchstick. The presence of water will not allow the honey to burn. If it does, it will produce a cracking sound.
5.	Coffee powder	Add half a teaspoon of coffee powder in a glass of water. Stir for a minute and keep it aside for five minutes.	If adulterated, clay practices will settle at the bottom.
6.	Tea	Sprinkle a teaspoon of tea powder on a moist blotting paper.	If the colour of the blotting paper changes to yellow, orange or red, it indicated the presence of used tea leaves that have been artificially coloured. Pure tea leaves release colour only when they are added to hot water.
7.	Silver foil	Light the silver foil.	On being lit, silver foil will burn leaving a glistening white spherical ball of the same mass. Aluminum foil reduces to dark grey coloured ash.

Main source: FSSAI manual DART

FDCA OPINION:

Grahak Sathi spoke to Dr. H.G. Koshia, Commissioner of Food and Drug Control Administration (FDCA), Gujarat, on the subject.

What are the steps being taken by FDCA for consumer protection from food adulteration?

FDCA does vigorous sampling through its enforcement team to catch wrongdoers in the food business. It conducts mass-level sampling and surveillance activities through a mobile testing van. This way, it checks the quality of food available in the market. Moreover, vigorous inspection and monitoring of FBOs (food business operators) is done. FDCA has developed a website <https://gujhealth.gujarat.gov.in/food-and-drug-control-administration.htm> where consumers can post complaints. They can also call the toll-free number 1800 233 5500 to complain about food quality.



How can a consumer avail the facility of the mobile van which checks for adulteration?

The Gujarat Government has four mobile testing vans. Each van has the latest instruments to check the quality of milk, edible oil, ghee, iodised salt, spices, fruit juices, tea, sweets and seasonal foods. The state government has also developed a primary testing kit available in the van. A consumer can use this kit to test for several commodities at home.

What are the future activities envisaged to protect consumers from unsafe food?

In future, FDCA has a plan to upgrade the quality of street food and quality of *prasad* available to pilgrims. Recently, Kankaria Street of Ahmedabad was recognized as the first 'Clean Street Food Hub' of the nation. We plan to upgrade more streets, so that consumers can confidently eat street food which is low in cost.

In the area of food adulteration, what is your wish list?

The wish list of the FDCA is to see that each and every consumer gets safe and good quality food.

Grahak Sathi's conclusion:

Adulteration amounts to cheating the consumer and poses serious health risks as toxic substances could be added to food ingredients. Consumer awareness is the best remedy for eliminating adulteration.



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<http://cercindia.org/dec-18-cover-story/>