



## QUALITY VERSUS DECEPTION : A CLOSER LOOK AT ADULTERATED FRUITS AND VEGETABLES IN THE MARKET

-Akanshi Sharma,  
University school of Environment Management,  
Guru Govind Singh Indraprastha University

The adulteration of fruits and vegetables poses a significant scare to public health and consumer trust in India. Fruits and Vegetables are core elements of human nutrition, delivering vital vitamins, minerals, and dietary fiber essential for good health. In India, where agriculture endures a significant portion of the population, the consumption of these nutrient-rich foods is not just a Gastronomic preference but a way of life. Alternatively, the safety and truthfulness of these dietary staples have come under surveillance due to the widespread issue of adulteration. Adulteration, defined as the intentional addition of secondary or harmful substances to food items poses acute threat to public health and the agricultural sector's sincerity.

Consumption of adulterated food for long will have both short-term and long-term impacts on our health. Hazardous effects of adulteration are correlated with diarrhea, abdominal pain, nausea, vomiting, eyesight problems, headache, cancer, anemia, insomnia, muscular paralysis and brain damage, stomach disorder, joint pain, liver disorder, dropsy, gastrointestinal

problems, respiratory distress, cardiac arrest, glaucoma carcinogenic effects, kidney failure, digestive system disorders, etc.

While food adulteration is a global alarm, India's unique agricultural landscape, distribution networks, and regulatory obstacles demand a context-specific examination of adulteration in fruits and vegetables. The adulteration of fruits and vegetables accounts for a wide range of deceptive practices, including the use of artificial colors, chemical preservatives, pesticide residues, and the falsification of their origin or quality. Such practices not only misguide consumers but also pose serious health risks, leading to various health issues and diseases.

**A comprehensive range of chemicals are used as adulterants in fruits and vegetables:**

Calcium carbide is used to artificially ripen fruits and vegetables. It is often used traditionally in granular or powder form. The high cost and insufficiency of ethylene availability, faster-ripening capability due to the breakdown of glucose, and being comparatively cheaper than other chemicals are the root causes behind its vast usage.

Oxytocin is a mammalian hormone that is widely used in bottle gourds, bitter gourds, pumpkins, and cucumbers to improve size and color. The saccharine mixture was found to be injected into melons and watermelons to enhance sweetness artificially. Dyes that are commonly used in vegetables are Rhodamine B, Auramine, Congo red, malachite green etc. Red dye is injected into watermelons to enhance the palatability of the consumers. Malachite green is widely used to make green vegetables such as green chili, peas, bitter gourds, lady finger etc., look greener, fresh, bright, and glowing. With the increasing globalization of food trade and the uncertainty of supply chains, recognizing and mitigating adulteration has become a remarkable challenge for supervisory authorities and beneficiaries across the world.

This article aims to provide an extensive analysis of the current challenges associated with the adulteration of fruits and vegetables, highlighting the various methods employed by unprincipled actors in the food industry. Adulteration can take many forms, from the use of harmful chemicals and dyes to the addition of lower-quality or even toxic substances, all in an effort to enhance the appearance or shelf life of produce. By evaluating the common adulterants and the potential health implications for consumers, this article seeks to shed light on the gravity of the issue. It will also explore the regulatory frameworks in place, the effectiveness of current enforcement measures, and the role of consumer awareness in combating this pervasive problem. Through comprehensive research and analysis, the article aims to raise awareness and encourage action to ensure the integrity of our food supply.

## TRICKS TO FIND ADULTERATED FOOD

### 1) DETERGENT IN MILK

- Take 5-10ml of sample with equal amount of water
- Shake the content thoroughly
- Milk adulterated with detergent form a dense lather
- Pure milk form very thin lather due to agitation



### 2) IMPURE COCONUT OIL

- Take coconut oil in transparent glass
- Place this glass on refrigerator
- After refrigeration coc-oil solidifies
- If coconut oil is adulterated, then other oils remain at separate layer



### 3) SUGAR IN HONEY

- Take a transparent glass of water
- Add drop of honey to glass
- Pure honey will not disperse in water
- If honey disperses, sugar is present



### 4) BLEACH IN FLOUR

- Bleached flour will have a bright hue and fine grain
- Unbleached flour will look pale and off-white with dense grain



### 5) FOOD DYE IN PEAS

- Add a table spoon of green pea to transparent glass
- Add half a cup of water and mix well
- Let it stand for half-an-hour
- If water remain clear adulteration absent, if water gain color adulteration is present



### 6) CLAY IN COFFEE

- Add 1/2 tea spoon of coffee to transparent water glass
- Stir for minute and keep it aside for 5 min. Observe glass at bottom
- Pure coffee will sit at the top of water
- Clay particle at bottom of glass



### 7) WAX COATING ON FRUIT

- Take blade and scratch surface of fruit
- Wax comes out if wax polishing has been done



FOODTECH-LEARNERS