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To know about food adulteration

Brulin Ineesh Biswas[1], Dr Reena Thakur[2]
[1] Department of Nursing, Malwanchal University, Indore, Madhya Pradesh, India
[2] Professor, Department of Nursing, Malwanchal University, Indore, Madhya Pradesh, India

Abstract
Any item that may be consumed by people or animals for nourishment or as a critical component of life is considered to be food. Food is made up of carbohydrates, water, fats, and proteins. While supply networks typically deal with perishable goods that could be dangerous to consumers if they are not maintained appropriately, food products are frequently the target of adulteration. Economic adulteration is a persistent issue that the food business must deal with. Food adulteration has been a problem since the dawn of civilization since it not only lowers the quality of food goods but also has a number of negative health impacts. Food adulteration occurs when undesirable, dangerous, or superfluous ingredients are added to food, lowering the food's quality. Due to inadequate management, the issues with adulteration render the food products utilised in our daily lives dangerous and unclean for usage. Food adulteration has a significant negative impact on health without our knowledge. We can ensure that the future generations have a healthy and secure future if we actively participate in these developments.

Keywords: Food Adulteration, nourishment, food

Introduction
Food, which is made up of carbohydrates, water, fats, and proteins, is one of the fundamental necessities for all living things and can be consumed for both nutrition and enjoyment by all animals, including human. Food products have always been susceptible to adulteration or fraudulent admixture with substandard inferior components. Food adulteration and contamination of necessary foods, which can serve as a potential source of disease infection or hazardous poisoning, are an increasing problem in India. According to Gahukar (2014), food deterioration typically happens during transfer from primary producers to consumers. The prevention of food adulteration depends heavily on customer awareness. Unawareness and unjust business practises could threaten customer health, and deception could result in poisoning.
Food adulteration is the process of lowering or reducing the quality of food by substituting food ingredients, adding unauthenticated substances, or removing a crucial component from food for the purpose of making money or due to other incidental causes. Consumers are ultimately duped by food adulteration, which also poses a number of health hazards. Finding a segment of the food market today that is devoid of adulteration is quite challenging. Because of this, it is crucial for the consumer to be aware of the most prevalent adulterants and how they may affect their health. This is because the rising number of food producers and the exceptional level of food imports provide producers the ability to deceive and scam consumers. Chemicals known as adulterants, which can be added to more expensive ingredients to raise their apparent quantities and lower their manufacturing costs or for other dishonest or malicious purposes, should not be present in our food or beverages.

Why food adulteration
Due to its low prevalence and minimal effects, adulteration has been in society for a very long time yet has gone unnoticed. But in the modern era, economic adulteration is a chronic issue that has the greatest impact on the food business. One survey found that milk was adulterated to a degree of 70% with water, turmeric powder to a degree of 43% with chalk powder, red chilli powder to a degree of 100% with artificial colour, sugar to a degree of 37% with chalk powder, etc. According to Afzal *et al*. (2011) [2], the primary motivation behind adulteration is to increase the volume of their financial earning. Although certain self-centered producers, processors, and retailers started adulteration in order to increase their profit margins, the primary reason of adulteration is dishonesty and a lack of unintentional quality assessment on suspicious products.
Food is frequently contaminated to feed the big population and to feed the burgeoning population as the world's population is increasing at an alarming rate. Outsourcing to foreign producers is another reason for falsifying and adulterating goods and services. Because labour is very inexpensive in some countries, outsourcing has become conceivable. This also makes product imitation simple because the cost of production is low compared to the high profits. Because globalisation is typically used to expand capital and know-how to new markets, Cofie (2012) [11] believes that counterfeiting feeds on the entire process of globalisation.

Types of adulteration
Adulteration of foods is done by many means but broadly there are two types of adulterations. According to El-loly *et al*. (2013) there are intentional and unintentional.

Intentional adulteration
When a food product is intentionally altered, it is referred to as intentional adulteration. It is the addition of subpar materials with qualities akin to those of the foods to which they are introduced. They are therefore challenging to find. It's possible that the adulterant is biological or physical in origin. After reducing a certain amount to boost their profit margin with chemicals like urea and melamine, it is done to

increase the level of their essential nutrients. Substances like starch, flour, cane sugar, vegetable oils, water, skim milk, sand, chalk powder, molasses, stone, brick powder, ergot, chicory, and roasted nuts are added to increase volume.

Incidental adulteration

Food and drink products can get adulterated if suitable hygienic conditions aren't maintained from the production site to the consumption table. Pesticide remnants, rodent droppings, larvae in foods, etc. are examples of unintentional adulterants. Accidental metal contamination with arsenic, lead, or mercury is also possible. Pests like rats and insects that trespass on food to a high degree and cause impurity in the form of excreta, body fluids, and deterioration through microorganisms are also considered accidental adulterants.

Impacts of adulteration

Due to improper handling caused by adulteration, the food products we use on a regular basis are hazardous and unclean (Asrat *et al*., 2012) [5, 6]. Food adulteration has escalated in importance over the past few decades, and eating it puts one at risk for major illnesses like cancer, diarrhoea, asthma, and ulcers. In general, adulteration of food products has a highly negative effect on farmers, manufacturers, consumers, and the government.

Impacts on enterprises

Businesses are impacted by a decline in consumer confidence in their goods, recalls and the disposal of contaminated goods, complaint costs, an increase in insurance rates, and charges for replacing or cleaning equipment. It is inevitable that a supplier will make a mistake, which will damage their reputation in the media (Pandpal *et al*., 2012). This has an impact on many other products that the company's warehouse or merchants supply, in addition to the sales of the specific product in question. Products may even be automatically prohibited or thrown. Such restrictions have numerous, significant, and wide-ranging implications on the food producing sector. A manufacturer who depends on an imported food that has been outlawed not only experiences financial loss for the affected product, but also faces lost sales due to a decline in consumer confidence.

Impacts on consumers

Food adulteration has a significant negative impact on human health. Hazardous effects of food adulteration include giddiness, joint pain, liver disorders, gastrointestinal problems, respiratory distress, edoema, cardiac arrest, glaucoma carcinogenic effects, kidney failure, digestive system disorders, eyesight problems, headaches, cancer, anaemia, insomnia, muscular paralysis, and brain damage.

It has been discovered that many of the chemicals and colours used to dye fruits and vegetables are extremely harmful to human health. Mangoes, bananas, copper sulphate, which ripens fruit more quickly, and cucumber, watermelon, brinjal, gourds, and pumpkins all benefit from the usage of calcium carbide. On pears and apples, wax adds lustre. To provide a vibrant colour to bitter gourd and leafy vegetables, cheap green dyes containing chemicals like metallic lead are often used. Overuse of pesticides and herbicides in the production of fruits and vegetables.

Safety measures producers and manufacturers

It is necessary to make a change by implementing good agricultural practises (GAP), which include integrated pest management, in order to prevent food contamination of agricultural produce before and after harvest. Applications of secure and advised pesticides should be substituted for excessive and indiscriminate quantities of synthetic fertilisers and pesticides. These procedures would contribute to the reduction of chemical use in general and the management of aflatoxin in particular. Trichoderma spp., which are powerful antagonists that produce volatile and diffusible antibiotics, can decrease Aspergillus flavus contamination in peanuts. Spraying with a mixture of water extract (5%) from pongam (Pongamia pinnata) bark or tamarind (Tamarindus indica) fruit is another efficient eco-friendly measure.

The best practical solution to prevent contact with chemicals is to use personal protection equipment, gloves, and wash your entire body after working hours in industrial businesses. Additionally, the recommended safe period prior to crop harvest must be strictly observed, and the prescribed norms, including antidotes and preventive measures, must be followed. Dumping of toxic effluents into industrial zones must be prevented. Other preventive methods include labelling, regular authority follow-up for specified food standards, and careful control over various sources of contamination. Simple chemical tests can verify the presence of pollutants if there is any uncertainty.

Inspection and testing

The current food chain is intricate, flexible, and effective, but the infrastructure linking its numerous players is patchy and poor. As a result, there aren't many true channel masters who can control the supply-demand situation, organise the entire supply chain, and oversee logistical operations. Regular food testing and sampling at the retail level can make sure that stores only stock safe goods and remove any that appear unfit for eating. The reality is that farmers attempt to push their products onto the market despite the fact that demand forecasting is essentially nonexistent. In order to ensure perfect storage conditions for perishables from the point of origin to the point of human consumption, the cold chain has recently been added to the food supply system. Therefore, a well-managed cold chain can lower spoilage, maintain the quality of the harvested produce, and ensure an economical delivery to the consumer with enough attention to the customer experience. In addition to the cold chain, the supply chain must be planned and constructed in an integrated manner employing processes for product development and effective procurement, all of which must be backed by suitable information technology and software.

Conclusion

Food adulteration has a significant negative impact on health without our knowledge. By taking a few proactive steps, our society can stop it. The government needs to look into the increase in food prices. The consumer should refrain from purchasing food from establishments that do not maintain proper hygienic standards. Government organisations should inspect both regional and national food retailers.

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