Journal of Food Safety and Hygiene
journal homepage: http://jfsh.tums.ac.ir

Editorial

The importance of food safety and its challenges in human health

Nabi Shariatifar [a,b]

[a] *Department of Environmental Health Engineering, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran.*
[b] *Halal research center of IRI.FDA.MOH, Tehran, Iran.*

Food is any substance consumed by living organisms and as a source of energy and nutrients for metabolism of body. The right to food is a survival human right. International law, frees everyone's right to adequate food and the fundamental right to hunger, which is very important for the enjoyment of all human rights. However, the right to adequate food and freedom from hunger is far from reality for many people around the world (1).

We eat different food for survival. We take *Fruit juice* and juice *canned fruit* and sweets for our patients. We buy poultry meat, fish, beef and sheep meat and fruit from our favorite superstore to entertain our guest. We take birthday party with sweets and fast food. All these activities are actually very common in our society and they bring smile to our loved ones and also give us immense pleasure. However, the irony is that these can also be the sources of our loved ones' illness**.** Therefore, we are concerned about safety of food. Unsafe food can be a significant reason of many Infectious and non-communicable diseases.

In Iran, most of the foods that are produced or processed are safe for consumption, however, most of foods that are prepared by low-level restaurants and on-the-go restaurants are unsafe for consumption and also adulterated to varying degrees. In fact, this problem may persists at every level of the food chain from preparation to consumption. Also, some food manufacturers, processors, restaurants, fast food and so forth are all involved in one or more ways, in this corrupt practice using a variety of harmful types of chemicals and toxic artificial colors. On the other hand, perishable foods are turned to poisonous foods as these are stored, sold and served to consumers in an unhygienic condition. The range of chemicals and coloring agents that are being used in food is beyond imagination. Calcium carbide is applied on fruits to ripen, some of color such as Mercurochrome in lung fish, formalin and paraffin-wax in fruits and vegetables as preservatives, brick dust, skin of pistachio, flour, plant of *CarthamustinetoriusL.* (Golrang) and synthetic colorants in spices; acetic acid and straw water in lemon juice, extract of date, berries, grapes and sugar in honey; hump of soil, sand and sawdust in wheat; potassium bromide, bicarbonate sodium, Sodium dithionite (Blankit®) in bread, artificial yellow color in macaroni; Propylene glycol in herbal essences, Potassium sorbate and sodium benzoate in doogh (Iranian dairy-based drink), soap, acid, starch, table sugar, bicarbonate sodium, Chromate and potassium dichromate, Hydrogen Peroxide, Sodium Hypochlorite and chemicals like formalin and Sulphuric acid is used in milk for condensation, urea to whiten rice and puffed rice, sawdust in loose tea, soap in ghee and artificial sweetener, paraffin in edible oil and Various colouring agents in butter, artificial color and textile dyes in sweetmeats of confectionary. Various colouring agents are used in sauces, juices, lentils. Edible oil and flour in kashk (Iranian dairy-based food), nitrite Over Allowed, powder of bone, Non-protein nitrogen (or NPN), Skin, testicles in meat and meat products, Many restaurants use burnt engine oil for deep fry. Even the cooking oil becomes poisonous due to repetitive use of same oil in restaurants.

Chemical contaminants and residues in food which may enter the food during the food chain such as polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs), polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs), perfluorooctane sulfonate (PFOS), perfluorooctanoic

*Corresponding author. Tel.: 00982142933071
E-mail address: nshariati@tums.ac.ir

acid (PFOA), pesticides, toxic metals, and veterinary drugs. Biological contamination such as Bacterial contamination, viral contamination or parasite contamination that's transferred through saliva, pest droppings, blood or fecal matter to food. Natural toxins are toxic substances that are naturally produced by living organism. This toxic substances are present in a wide variety of plants. We feel utterly helpless when we come to know that over fifty percent of the food products available in markets are contaminated by underlying one way or another.

Unhygienic practices in food handling and food servicing

Unhygienic food is a significant reason of diarrheal diseases as well as malnutrition. In addition Unsanitary processing of food has a severe impact on the export facilities in Iran. For example, in 2005 The Ministry of Health has restricted the use of vegetables in the summer from *market of Iran due* to germs of cholera (2).

Use of chemical compounds in foods

Supermarkets openly sell fruits, fishes and vegetables that have been treated with formalin or Paraffin to keep them fresh. Paraffin ingestion rarely results in death, only a small amount (1ml) is required to produce complications through chemical pneumonitis), pneumonia and other respiratory complications. These complications often result when paraffin is aspirated into the lungs, sometimes through induced vomiting Consumption of formalin directly through food can cause different types of cancers especially the lung cancer (3, 4). Bakers use the harmful compounds like sodium dithionite in bread. Sodium dithionite destroys intestinal villi and antioxidants inside the body. This substance is an effective in blocking hormones of the body, especially insulin, and therefore directly increases the risk of diabetes. Sodium dithionite also damages the eyes and skin, causing a gene mutation and chromosomal abnormalities (5, 6).
Mango sellers use calcium carbide for ripening mango, resulting in the production of various health problems such as headache, dizziness, mood disturbance, sleepiness, mental confusion, memory loss and seizure (7).

Use of toxic food colors

Many more reports of the dangers of consuming synthetic food additives can be found in the sweets (7). These are applied in the various types of sweets like candy and other confectionery products and some spices such as saffron. These can create indigestions, vomiting, diarrhea, allergy, asthma and several kinds of neurological diseases like hyperactivity in children and cancer (8).

Natural toxins in food

Mycotoxins are one of the naturally occurring toxic compounds produced by certain types of moulds. Moulds that can produce aflatoxin grow on numerous foodstuffs such as nut, dried fruits and spices. In 1997, the European Union banned importing pistachios from Iran due to high levels of aflatoxin contaminations (9).

References

1. Kent G. Freedom from want: The human right to adequate food: Georgetown University Press, 2005.
2. Ataee R, Mehrabi-Tavana A. An analysis on recent Cholera epidemic in IR IRAN. J Mil Med 2005; 7:177-185.
3. Wooster GA, Martinez CM, Bowser PR, et al. Human health risks associated with formalin treatments used in aquaculture: initial study. North American J Aqua 2005; 67:111-113.
4. Govender I. Paraffin poisoning in children. What can we do differently? Letter to the editor. South African Family Practice 2006; 48:4.
5. Salimi F, Nemati A, Amani F, et al. Survey of Blankit Residues in sugarloaf, shakar-panir and rock candy in Ardabil province in 2015. J Health 2017; 8:204-210.
6. Seidmohammadi A, Asgari G, Sharifi Z, et al. Study of the residual Sodium Hydrosulfite (Dithionite) levels in produced industrial breads: case study in Hamadan. Pajouhan Sci J 2017; 15:23-28.
7. Carocho M, Morales P, Ferreira IC. Natural food additives: Quo vadis? Trends in Food Sci & Technol 2015; 45:284-295.
8. Avazpour M, Seifipour F, Abdi J, et al. Detection of dyes in confectionery products using thin-layer chromatography. Iranian J Nutr Sci & Food Technol 2013; 8:73-78.
9. Bui-Klimke TR, Guclu H, Kensler TW, et al. Aflatoxin regulations and global pistachio trade: insights from social network analysis. PloS one 2014; 9(3): e92149.