

Food contamination: Emerging biological risks in foods.

Qinan Zhou*

Department of Food Science and Nutrition, Zhejiang University, Hangzhou, Zhejiang, China

Abstract

The focus of this issue of Foods is on the problems with microbiological, chemical, and physical contamination of food products. Foods that are damaged or tainted because they either contain microorganisms, such as bacteria or parasites, or toxic compounds that render them unsafe for consumption are often referred to as contaminated foods. It is more typical for food contaminants to be biological than chemical or physical. These pollutants can enter a food product through a variety of points along the supply chain, rendering it unsafe for human consumption. *Yersinia enterocolitica*, *Listeria monocytogenes*, *Salmonella spp*, *Shigella spp*, Pathogenic *Staphylococcus aureus*, *Bacillus cereus*, *Campylobacter jejuni*, *Clostridium botulinum*, *Clostridium perfringens*, Pathogenic *Escherichia coli*, *Shigella spp*, *Vibrio cholera*, *V. parahaemolytic* (a type of biological contaminant). Pesticides, heavy metals, and other foreign chemical agents are examples of the chemical food pollutants that can enter the food supply chain.

Keywords: Food contamination, Biological risks, Antibiotic resistant bacteria.

Introduction

Food contamination is a serious public health issue that affects people worldwide on a yearly basis by causing food-borne illnesses. This chapter focuses on the microbial, chemical, and physiological causes of food contamination. The majority of foods act as the greatest growing media for a variety of microorganisms. Food characteristics such as flavour, odour, and appearance may alter as a result of microorganisms that develop inside the food. In addition to degrading food, microbes also produce things like colours and slimes, which also affect food quality. These degradative alterations include putrefaction, fermentation, and rancidity [1].

Food contamination involves a variety of contamination methods. Temperatures used for cooking and storage, improper hand washing, and animal faeces are all minor factors that might result in food-borne illness. Food prepared by somebody who did not thoroughly wash their hands can contain microbes. The majority of kitchen equipment and surfaces are contaminated by raw food items. Food contains pathogen replications that can lead to disease [2].

The rise of Antibiotic Resistant Bacteria (ARB) is increasingly recognised as posing a risk to environmental and public health, and the WHO has already put forth a global approach to combat the issue. Publications that discuss the relationship and frequency of ARB in food products are now prevalent. Prior to now, the healthcare setting was the primary offender; now, the abuse of antibiotics in food production is complicating the matter. In conclusion, foods tainted with ARB will pose a serious threat to food safety in the future. A major global

concern is intentional food and food product contamination. The deliberate addition of a dangerous or poisonous material to food products is referred to as intentional food contamination. It is illegal and is also referred to as food fraud. Intentionally contaminated food should not be consumed because it can badly harm customers. Consequently, it is equally crucial to address the problem of fake food contamination [3].

Food spoiling and destruction during storage are typically brought on by microbial contamination of the food and oxidation brought on by Active Oxygen Species. This deterioration and rotting during storage affects the food sector, the environment, and both. Using preservatives in food is crucial to preventing contamination and food deterioration. Artificial preservatives used in food to stop spoilage and contamination are bad for both the environment and human health. Therefore, it is in the food companies' best advantage to switch from synthetic to natural, botanical, and secure preservatives. It is possible to stop food degradation and food contamination by using essential oils of aromatic plants as a natural, secure preservative with botanical origin in foods [4].

One of the most detrimental effects of environmental contamination is food contamination, which is now the main exposure pathway for people. Foods with an animal origin (meat, eggs, milk and fish) and processed foods have been reported to have the highest levels of HCN and other congeners (oils, cereals, meat). Therefore, it is not shocking that PCNs have been discovered in both people and wildlife. In general population samples of adipose tissue, liver, blood, and breast milk, chlorinated naphthalenes, particularly dioxin-

*Correspondence to: Qinan Zhou, Department of Food Science and Nutrition, Zhejiang University, Hangzhou, Zhejiang, China, E-mail: qinan@zju.edu.cn

Received: 27-Dec-2022, Manuscript No. AAFMY-23-84998; Editor assigned: 30-Dec-2022, PreQC No. AAFMY-23-84998(PQ); Reviewed: 13-Jan-2023, QC No AAFMY-23-84998;

Revised: 18-Jan-2023, Manuscript No. AAFMY-23-84998(R); Published: 25-Jan-2023, DOI:10.35841/aafmy-7.1.132

like congeners, were found in quantities in the nanogram per kilogramme lipid range. The penta, hexa and to a lesser extent, tetra-isomer pattern of the chlorinated naphthalene congeners found in humans differs dramatically from that of commercial chlorine naphthalene mixes [5].

Conclusion

When food products are contaminated with a potentially poisonous and hazardous chemical, food safety is typically jeopardised. The food industry constantly deals with several regional and worldwide contamination problems that are both current and emerging, and it does so by advancing science and technology. Therefore, knowledge of the types of contamination, their sources, consumer dangers, and strategies for reducing or eliminating contamination levels is crucial for food safety management. To produce food products with a low risk of contamination or devoid of contamination, sound scientific understanding is required.

References

1. Fukuda K. Food safety in a globalized world. *Bull World Health Organ.* 2015;93:212.
2. Pruden A, Pei R, Storteboom H, et al. Antibiotic resistance genes as emerging contaminants: studies in northern Colorado. *Environ Sci Technol.* 2006;40(23):7445-50.
3. Skerfving SB, Copplestone JF. Poisoning caused by the consumption of organomercury-dressed seed in Iraq. *Bull World Health Organ.* 1976;54(1):101.
4. Li MC, Tsai PC, Chen PC, et al. Mortality after exposure to polychlorinated biphenyls and dibenzofurans: 30 years after the “Yucheng accident”. *Environ Res.* 2013;120:71-5.
5. Oplatowska-Stachowiak M, Elliott CT. Food colors: Existing and emerging food safety concerns. *Crit Rev Food Sci Nutr.* 2017;57(3):524-48.