

Chapter 4

Food Microbial Hazards, Safety, and Quality Control: A Strategic Approach


Aysha Sameen

*University of Agriculture, Faisalabad,
Pakistan*

Usman Mir Khan

*University of Agriculture, Faisalabad,
Pakistan*

Amna Sahar

 <https://orcid.org/0000-0002-9299-4000>

*University of Agriculture, Faisalabad,
Pakistan*

Tayyaba Tariq

*University of Agriculture, Faisalabad,
Pakistan*

Bushra Ishfaq

*University of Agriculture, Faisalabad,
Pakistan*

Farwa Tariq

*University of Agriculture, Faisalabad,
Pakistan*

ABSTRACT

Food is any material or substance eaten or drunk to provide energy and nutrients for the body's growth, development, and maintenance. Food can be considered safe if it is free from all hazardous substances that can affect consumer health. Food safety issues can place a high burden of responsibility on traders, government bodies, and international organizations. This chapter covers the hazards, their types, foodborne diseases, and strategies to ensure food safety and quality. Different food quality and safety assurance programs are discussed as well like quality management systems, HACCP certification, ISO 9000 family, good manufacturing practices (GMP)/good hygiene practices (GHP), total quality management (TQM), good working practices (GWP), good lab practices (GLP), etc. Moreover, the role of some novel processing technologies is also focused on in this regard.

DOI: 10.4018/978-1-7998-7415-7.ch004

INTRODUCTION

Food is any material or substance eaten or drunk to provide energy and nutrients for the body's growth, development, and maintenance. It is usually of an animal or plant origin consisting of nutrients like fats, proteins, carbohydrates, vitamins, and minerals (Abdulummeen et al., 2012). Food is the basic precondition for survival but food quality and safety issues embrace us all time (Jeukendrup & Gleeson, 2018). According to the Food and Agriculture Organization of the United Nations (FAO), food quality can be defined as “a complex characteristic of food that determines its value or acceptability to consumers” (McLoughlin et al., 2017; Nielsen, 2010). Basic quality control and quality assurance programs are used by food industries like other industries for achieving food quality e.g. ISO 9000 Quality Management System Standard, HACCP system, GMPs, etc. (Hubbard, 2012; Nguz, 2007).

Food can be considered safe if it is free from all hazardous substances that can affect consumers' health. In pre-historic times, the food safety chain was very short; it compromised hunter-gatherers and their families. When societies grew complex and larger, this chain became more diffused due to an expanded international trade network and long shipping distances (Gorris, 2005). This chain can be a reason for introducing unfamiliar food safety hazards during food transportation. This situation places a high burden of responsibility on traders, government bodies, and international organizations. There is a need to improve food safety regulations and systems to ensure the safety of consumers by taking multidimensional approaches at all levels of the food chain, from farm to fork (Gorris, 2005; Jeukendrup & Gleeson, 2018; Unnevehr & Huirne, 2002).

FOOD HAZARDS

Food hazard can be characterized by any physical, chemical, or biological agent that has the potential to exert harmful effects on human health (Peter et al., 2013).

Physical Hazards

Physical hazards are any poisonous or deleterious foreign objects incorporated into food that have clinical evidence of injury or traumatic injury including perforation of tissues present in the oral cavity and gastrointestinal tract if ingested. This includes hard or sharp foreign objects and choking hazards. Contaminants like dirt, hair, insects, wood splinters, glass, and metal are included in the category of physical hazards (Das et al., 2019). Potential sources of these hazards include:

30 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/food-microbial-hazards-safety-and-quality-control/291994

Related Content

Barriers of Agrisupply Chain Management: During Mental and Physical Stress During Farming in Tractor

Suchismita Satapathy, Hullash Chauhan, Meghana Mishra, Hemalata Jena and Rita K. Sahu (2024). *Advanced Computational Methods for Agri-Business Sustainability* (pp. 117-139).

www.irma-international.org/chapter/barriers-of-agrisupply-chain-management/350035

Greek Consumers' Perceptions on Sponsored Food Advertisement Through Social Media and Its Effects on Their Purchasing Behavior

Nikolaos Sklavounos, George Kartsiotis and Konstantinos Rebholz (2023). *Influences of Social Media on Consumer Decision-Making Processes in the Food and Grocery Industry* (pp. 56-85).

www.irma-international.org/chapter/greek-consumers-perceptions-on-sponsored-food-advertisement-through-social-media-and-its-effects-on-their-purchasing-behavior/328373

A Review of Honey Application in Marinades Towards Hetero-Cyclic Amines (HCA) Formation: Physicochemical and Sensory Properties of Marinated Products

Nik Nadia Syamimi Mat and Norizah Mhd Sarbon (2023). *Recent Advances in Global Meliponiculture* (pp. 1-40).

www.irma-international.org/chapter/a-review-of-honey-application-in-marinades-towards-hetero-cyclic-amines-hca-formation/315988

Insect Pest Control in Orchards

Mohamed Abdel-Raheem (2022). *Handbook of Research on Principles and Practices for Orchards Management* (pp. 277-294).

www.irma-international.org/chapter/insect-pest-control-in-orchards/309173

Processing and Visualizing Floating Car Data for Human-Centered Traffic and Environment Applications: A Transdisciplinary Approach

Patrick Volland and Hartmut Asche (2018). *Innovations and Trends in Environmental and Agricultural Informatics* (pp. 105-128).

www.irma-international.org/chapter/processing-and-visualizing-floating-car-data-for-human-centered-traffic-and-environment-applications/207273