

DOI No.: <http://doi.org/10.53550/EEC.2024.v30i02s.008>

Assessment of the Microbial and Chemical Safety in the Street Food – A Review

Ms. Reshma Wagh*, Pranay Abhang and Girish Pathade

**Krishna Institute of Allied Sciences, Krishna Vishwa Vidyapeeth (Deemed to be University),
Karad 415539, Maharashtra, India**

(Received 25 July, 2023; Accepted 18 September, 2023)

ABSTRACT

Improper personal hygiene can facilitate the transmission of pathogenic Bacteria found in the environment and on people's hands via food. The present study is undertaken to investigate the microbiological quality and chemical residue present in the different street food samples in Karad, Maharashtra. For Microbial Screening of various street food samples, Enrichment spread plates, streak plate techniques, and Biochemical characterization will be performed. For chemical analysis, the chemical Residue present in street food will be analysed by spectroscopy. The Microbial and chemical safety of Street foods will be compared with WHO guidelines for food safety and other food regulatory Standards. FSSAI (Food Safety and Standards Authority of India) Strategies For the will be set on the Basis of collected data enhancement of Microbiological and chemical Safety of street-vended food.

Key words: Street food, Hygiene, Public health, Food safety

Introduction

The street-vendor food is ready-to-eat food (RTE). Beverages that are sometimes prepared by vendors in the streets and other public places and mostly sold to consumers for immediate or later consumption without further preparation or processing are sold in crowded places such as open-air markets and Bus termini so as to attract consumers. As a result, vending sites frequently lack infrastructure and are unsanitary. Basic infrastructure Such as toilets, potable water supply, handwashing facilities, waste disposal systems, and good drainage systems Vending sites such as those for waste disposal sites provide ideal Breeding sites for rodents and insects, which can easily contaminate the foods with food safety hazards. Similarly, Food sold on the roadside, which is often dusty and contaminated with exhaust fumes from the vehicle, may easily be contaminated

with chemical food safety hazards.

Now a days, street foods are very necessary in public places sold by vendors. Because the flavour and nutritional value of street foods are excellent, they have become very popular in recent years. The urban class of people is ensuring this for security. Food-borne diseases are caused by different pathogenic microorganisms, but due to a lack of formal education and being untrained in food hygiene, they are prepared with those foods. In India, every day, a huge amount of people consumes street food in the streets, public places, school areas, near college campus bus stands, etc. Food can be contaminated by microorganisms like *Salmonella* species, *Shigella* species, *Campylobacter* species, *E. coli*, etc., which can cause serious food infections. Some microorganisms produce toxins in foods, i.e., food intoxication, eventually leading to food-borne illnesses. This is mainly due to unhygienic practises while preparing and

street food. Street foods, prepared by vendors and hawkers in the streets, are so popular due to their easy availability, low cost, variety, and taste. Street foods are a great boon to people under economic constraints. The increase in the labour force and industrialization paved the way for the expansion of the street food sector. Different kinds of chemicals and bacteria responsible for food poisoning cause different kinds of food-borne illnesses. A global awareness programme will be conducted about the microbial contamination of street-vendor food and health hygienic Food-borne diseases are caused by different kinds of pathogenic bacterial, viral, parasitic, or chemical contamination of food, which is a very tedious health problem. Microbes synthesise a harmful toxin that can cause common foodborne diseases like diarrhoea. Street foods play an important socioeconomic role in meeting the food and nutritional requirements of city consumers at affordable prices for lower and middle-income people (Zaman *et al.*, 2014).

Street food vending has evolved into a large industry and now provides an income for the vendors. This industry plays an important role in the cities and towns of many countries in meeting the demands of the people. It is widely recognised that street foods play a phenomenal socio-economic role in terms of giving business opportunities to many individuals across many countries. Philippines, as the means of this research also gives opportunities to those who are in the lower class to have a source of living by giving portable carts and starting capital for investment (Garcia *et al.*, 2018).

Today, it has become an urban mainstay in large cities and small towns alike and continues to evolve and tempt passers-by on streets around the world. Approximately 2.5 billion people around the world consume street food every day (FAO, 2011). Street food sellers are often without formal education, untrained in food hygiene, work under crude and unsanitary conditions, and have no or very little knowledge about the cause of food-borne disease. The prevalent foodborne diseases are also a result of limited training and poor food safety and handling knowledge among the vendors (Birgen *et al.*, 2020).

In the past, people consumed only home-made foods, but nowadays people are attracted to hotels, restaurants, and street foods. The food habits of the people at Itahari have a vast demarcation due to the various groups of people and their busy lives.

Food is one of the three essentials for the mainte-

nance of life and is a major determinant of health, nutritional status, and productivity in the population. Thus, the maintenance of a safe and nutritious food supply is of the utmost importance. Firstly, food should be of good nutritive value so as to provide the nutrients required for normal body functions; at the same time, it should be free from microbial, physical, and chemical contaminants that would undermine health and cause disease. (Saxena, 2016).

Health Hazards of Street Foods: Street food consumers in developing countries are generally more concerned about microbial hazards. Pathogens of significant public health importance, such as *Salmonella*, *S. aureus*, *Listeria monocytogenes*, *Campylobacter jejuni*, and *E. coli*, have been isolated in some street foods in developing countries. Reports in the literature show that consumers are aware that microorganisms, especially bacteria, are responsible for foodborne diseases but have very little knowledge about their pathogenesis. Asiegbu reported that street food consumers in Johannesburg, South Africa, were aware that certain microorganisms can cause diseases and even lead to death but knew very little about specific pathogens. Prior outbreaks of foodborne diseases linked to bacteria that attracted extensive mass media coverage were cited as the reason for their awareness. Samapundo also reported that over 80% of consumers interviewed in Port-au-Prince, Haiti, were not aware that *Salmonella spp.*, hepatitis A virus, and *S. aureus* are major pathogens responsible for food-related disease outbreaks.

Vending Location: The conditions in which some street vendors operate are reported to be improper for the preparation and sale of street foods. The street foods are prepared either at home or at stalls, some of which are located on the street side and some in front of the school. Some preparation surfaces used by some vendors have remains of foods prepared earlier that can lead to cross-contamination. Most of these street foods are not covered and are exposed to flies and dust, which may harbour food-borne pathogens.

Sampling of street food: The 15 different kinds of street food sample will be collected from the region of Maharashtra state by random sampling method and transported to the laboratory in the sterile zip lock plastic bags and analyzed for microbial safety and chemical safety of street food.

Microbiological analysis – For microbiological test-

ing, 15 different kinds of street food samples will be taken and diluted using the serial dilution method. After serial dilution, Enrichment spread plate and streak plate techniques will be used, and plates will be incubated at 37°C for 24 hrs. The microorganisms, viz., bacteria, algae, fungi, and protozoa, present in the street food will be isolated.

Chemical analysis the chemicals, viz., preservatives, pesticides, microplastics, and organic and inorganic chemical residues present in street foods, will be analysed by the spectroscopic method.

The microbial and chemical safety of street-vended foods will be compared with WHO guidelines for food safety (Ref No.: CB3404EN/1/02.21) and other food regulatory standards (FSSAI, Food Safety and Standards Authority of India).

The possible contamination mechanisms and pathways for street-vended foods will be evaluated. The strategies will be set on the basis of collected data for the enhancement of the microbiological and chemical safety of street-vendor foods in Karad, Maharashtra.

Conclusion

Street food is a source of public health problems. Major causes were a lack of attention to hygiene, poor access to clean water, and improper waste disposal. Street food, as a variety of chats, Chinese items, and refreshing beverages sold in all the cities in India, is consumed by a huge population; hence, steps must be taken to ensure that street food is safe to consume. The Government and the health ministry should establish adequate facilities and services,

as well as the provision of necessary information and training programmes for food handlers, vendors, and consumers. Thus, these studies ensure that there is an urgent need to create awareness about good hygiene practises among vendors for safer consumption of street food.

Acknowledgement

Grateful to Krishna Vishwa Vidyapeeth, Allied Sciences, Karad, Maharashtra) for their valuable guidance throughout the review.

Conflict of Interest: The authors declare no conflict of interest.

References

- Birgen Beatrice, J. 2020. Determinants of microbial contamination of street vended chicken product sold in Nairobi County, Kenya.
- Deshmukh Suparna, R. 2019. Microbial and chemical assessment of food stuffs from street vendors in Ahmednagar city.
- FSSAI, 2011. Food Safety and Standards (Food products Standards and Food Additives) Regulations. 2011. Appendix B
- Garcia John Cristian, 2018. Microbial Analysis on barbecued street foods sold Olongapo city.
- Ruchiverma, 2023. Assessment of food safety aspect of socioeconomic status among the street food vendors in Lucknow city.
- Saxena Gargi, 2016. Physico-chemical and microbiological quality assessment of street foods sold in Jaipur city of Rajasthan.
- Zaman Sharmin 2014 Food safety challenges towards safe, healthy and nutritious street foods in Bangladesh.