



Short Communication

Bacteriological status of Street-Vended foods and Public Health Significance: A Case study of Buldana District, MS, India

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Abstract

Data collected from street-vended food enterprises and on vendors from the urban area of cities of Buldana districts, MS revealed that, they provide a variety of ready-to-eat foods to a high proportion of the populations. Handling and trading practices of street vendors is not permit to obtain safe food. While, street-vended foods are easily contaminated by food borne pathogen. Street-vended foods (Ragda-Petis, Bhel, and Panipuri) sold by street vendors were analyzed for their microbial contents during initial rainy season. The total viable counts of all 60 samples were approximately $6.7 - 15 \times 10^2$ cfu/100ml with significant load of *E. coli* and *S.typhi*. Almost 70% of the street-vended food samples collected from street vendors are showed high bacterial load. Our results demonstrate the non hygienic quality of most popular types of street vended foods i.e. Ragda-Petis, Bhel and Panipuri. The emerging needs have followed the control measures to improve microbial quality of street vended foods.

Keywords: Street foods, *E. coli*, *S.typhi* and microbial quality.

Introduction

Street-vended foods or its equivalent "street foods" which are defined as foods and beverages prepared and sold by vendors on streets and other public places for immediate consumption or consumption at a later time without further processing or preparation. Urbanization and population growth, especially in developing countries, are expected to continue into the next century and street-vended foods, which are largely but not exclusively an urban phenomenon will expand accordingly¹. Vendors are often poorly educated, unlicensed, untrained in food hygiene, and they work under crude unsanitary conditions with little or no knowledge about the causes of food borne disease². Most of the foods are not well protected from flies, which may carry food borne pathogens. Safe food storage temperatures are rarely applied to street foods. Potential health risks are associated with contamination of food by *E.coli*, *Salmonella typhi*, *Pseudomonas* species, *Staphylococcus aureus* and *Proteus* species during preparation, post cooking and other handling stages^{3,4}. Even though people are aware that food borne diseases could occur due to consumption of street food, the majority disregards these health hazards⁵.

The street food industry plays an important role in meeting the food requirements of urban dwellers in many cities and towns of developing countries and the industry feeds millions of people daily with a wide variety of foods that are relatively cheap and easily accessible. So that, food borne illnesses of microbial origin are a major health problem associated with street foods⁶. Food borne illness of microbial origin is a major international health problem associated to food safety and an important cause

of death in developing countries⁷⁻⁹. The consumers who depend on such food are more interested in its convenience than in question of its safety, quality and hygiene¹⁰⁻¹².

The attempt was made to analyze of street-vended foods like Ragda-Petis, Bhel and Panipuri sold by street vendors for bacterial contaminations. The non hygienic quality of most popular types of street vended foods which was sold based on the consumer demand. There is an urgent need to follow the control measures by food vendors to improve microbial quality of street vended foods.

Material and Methods

Vending foods were collected from different locations of Buldana district. From every location, a vendor was chosen on the basis of their sale. Based on the consumer demand, street-vended foods like Ragda-Petis, Bhel and Panipuri sold by street vendors were analyzed for their microbial loads during initial rainy season.

All samples (1 plates each) were collected in sterile packed steel container and transported to the laboratory. The collected samples were analyzed for their bacterial loads. Microbiological analysis included enumeration and identification of potential pathogens according to standard procedures for the number of heterotrophic bacteria i.e. *E. coli* and *S. typhi*¹³⁻¹⁴. All plates were incubated under aerobic conditions at $36 \pm 1^\circ\text{C}$ for 24 - 48 hrs. The calculated number of colonies was expressed as colony forming units (cfu)/100 ml.

Results and Discussion

Street vended foods are analysed for bacteriological examinations from different locations of Buldana district. In this study, we are found that the pathogenic bacteria such as *E. coli* was present abundantly in number than the *S. typhi*. The total viable count of the aerobic bacteria are also studied which was higher in the numbers i.e. from 6.7×10^2 to 15×10^2 cfu/100ml which was shown in the following table as well as in the figure 1.

The collected foods samples are also analyzed for their presence or absence of *E. coli* and *S. typhi* in each food samples. Most of the street foods are contaminated with heavy load of *E. coli* and *S. typhi* especially in Panipuri and Bhel food samples. Because street foods are not protected from the various sources of contamination such as flies, which may carry food borne pathogens, multifunctional hands and also own health status of vendors. Safe food storage temperatures are rarely applied to street foods. These are the main leading facts for the

contamination of street vended foods. Potential health risks are associated with contamination of food by *E.coli*, *Salmonella typhi*, *Pseudomonas* species, *Staphylococcus aureus* and *Proteus* species during preparation, post cooking and other handling stages^{3,4}. The street vended food samples were contaminated with the *E. coli* than the *S. typhi* which shown in figure 2.

Food borne illness of microbial origin is a major international health problem associated to food safety and an important cause of death in developing countries⁷⁻⁹. The street vendors are less educated, rough methods and work under crude unsanitary conditions were cause of heavy contaminations of pathogenic bacteria in street vended foods which might be leads to food borne diseases in the people. But also a real fact, even though people are known that food borne diseases could be transmitted via the consumption of street foods, the majority disregards these health hazards.

Table-1

Sr. No.	Samples	Total No. of Samples	TVC cfu/100ml	<i>E. coli</i>		<i>Salmonella sp.</i>	
				Samples	%	Samples	%
1	Ragda-Petis	20	6.7×10^2	8	40	Nil	-
2	Bhel	20	9.6×10^2	14	70	6	30
3	Panipuri	20	15×10^2	16	80	8	40

Where TVC- Total Viable Count, cfu- colony forming unit

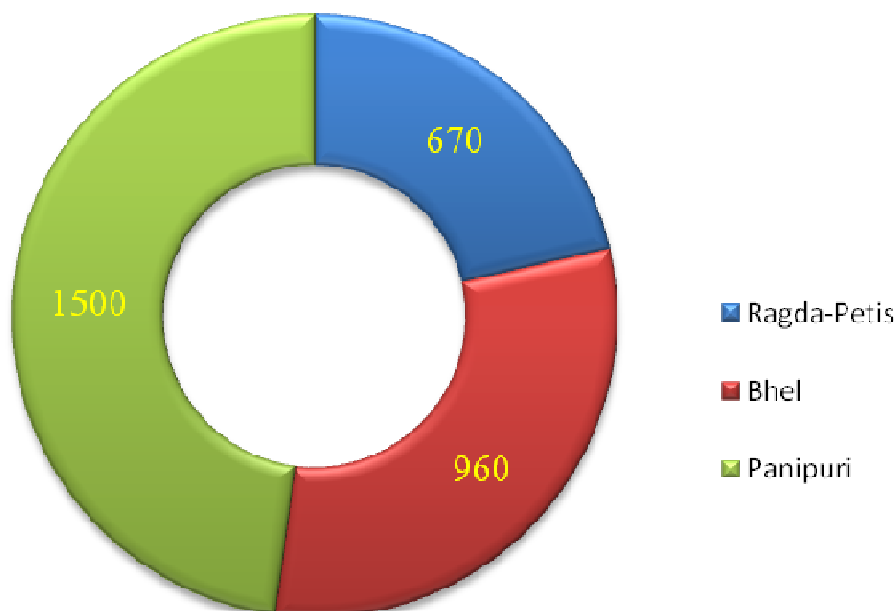


Figure-1
 Total Variable count present in street vended foods

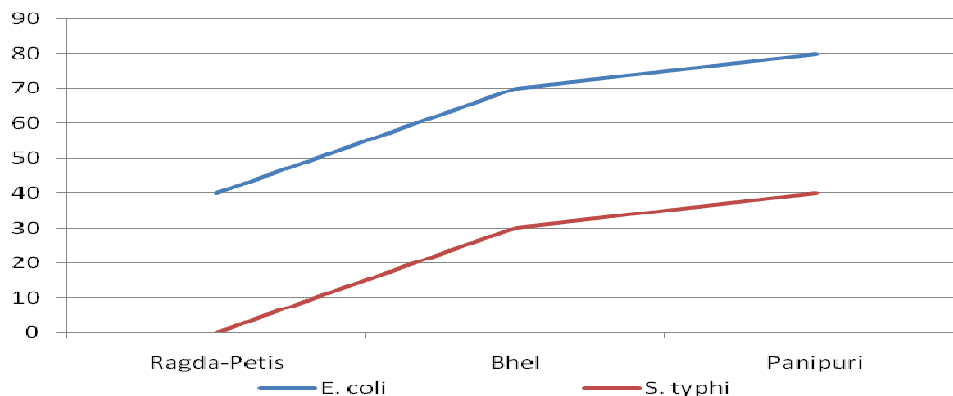


Figure-2
The percentage of E.coly and S.typhi in street vended foods.

Conclusion

The contamination street vended food samples potentially contaminated with the *E. coli* and *S. typhi* was the major problem associated with public health hazards. The unsafe street vended foods which were prepared under rough methods by less educated and lazy vendors. The unhygienic conditions were a source for the contamination of the street vended foods with pathogenic bacteria loads. Results demonstrated that non hygienic quality of most popular types of street vended foods i.e. Ragda-Petis, Bhel and Panipuri. The emerging needs have followed the standard control measures to improve microbial quality of street vended foods.

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