

Comparison between Safety Risks Associated with Domestically Processed Food and Commercially Manufactured Processed Food across the Food Supply Chain

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Received: December 13, 2018; **Published:** April 27, 2019

Abstract

It's generally considered that homemade food is safer than the food available in the market. In this era of technology this opinion does not stand completely true. Though there is no doubt that freshly prepared food is best of all [1]. This paper is written with an objective to indicate the common things and practices at home those can make food unsafe and indicated the options available to make commercially prepared food safer for all.

Keywords: *Food Supply Chain; Processed Food*

Introduction

Technology effecting the food preparation and its safety

In this era of technology, we are not only able to cook food in larger quantities, but we can store the food for quite a long time. This state of art has supported the dispersion of food to distinct areas throughout the year. We have larger varieties of food available whole year in market. Whereas at home, for having busy schedule of life, we usually cook food in larger quantities and store it in refrigerator until further use. This practice can question the safety of food. The refrigeration is not very much dependable strategy for preserving the food because of higher temperature difference between inside the fridge and its environment and for having risk of repeated power failure during the day as it happens in many developing countries. The broader aspects of Technology effecting the food preparation and its safety is covered in my work on threads associated with food supply chain that is in progress.

Smart tips and domestic bad practices

It is wise to be smart and look for safer options available e.g. food can be stored after putting in air tight glass boxes or bowls in small quantities in freezer. Freezing is not only a good option to preserve the cooked food for 7 - 10 days but it is equally good to preserve the washed and chopped vegetable ready to cook vegetables without thawing for about 3 - 4 weeks. It is recommended to avoid repeatedly store the same leftover food in fridge as it can risk the safety of food. For instance, holding food at room temperature allows the metabolic activity and other biochemical reactions within the food components to increase along with the growth of micro-organisms with having change in organoleptic properties of food causing deterioration in quality of food while increasing the risk of making it unsafe particularly if pathogens are present in the food. By keeping the thawed or un-refrigerated food held at room temperature for several hours in fridge the deterioration in food quality and heightened risk in its safety cannot be decreased or managed to make the food safer. Similarly, there are several practices that we do without realizing that it can support the unwanted organisms to grow and make the food unsafe and spoil it [2].

It includes keeping the cooked food uncovered, using the same spoon for different mixing food present in different dishes, mixing the leftover food with freshly cooked food, using the oil of leftover food in cooking, using same cutting board and knife for cutting meat and

vegetable, using any cutlery to crack the shell of raw eggs, marinating at temperature higher than 30°C, handling food without washing hands after using phone or remote devices (they have higher risk of carrying disease causing microorganisms because of multiple users including the guests) and so on. Usually people use knife or spoon to crack the shell of eggs. This is a very wrong practice as the shell of egg carries large number of microorganisms that can cause disease including the ones that are causative agent of typhoid. On touching the egg shell these organisms transfer from shell to the cutlery and later on to human beings by oral means. Phone devices or remotes that are made of plastic and have high tendency to adhere the organic material. They are frequently used by multiple users, that transfer the germs including the diseases causing ones, on these devices, where they find safe escape and a good place to flourish and spread to other users. Unlike other items, phone and remote devices are not washed or cleaned by using any disinfectant for being electronically sensitive and made up of plastics hence the accumulation of layers of organic material embedded within in microorganisms increases over a period of time, making such devices a harbour for spreading micro-organisms in a given population.

A few common Pakistani food items and safety risks associated with them

Liver and fish both raw and cooked are comparatively more prone to rapid decomposition in addition to having increased risk for its safety and hence should not be stored under refrigeration for more than 24 hours and more than 5 - 7 days under frozen conditions depending composition micro structure and microbial flora of food product based upon them or their components.

On consuming the prolonged stored fish or stored fish under inappropriate conditions, symptoms similar to allergy (scombroid) can develop. There are certain combination of nutrients which should not be stored outside the fridge for more than three hours and under refrigeration condition for more than 24 hours. Any food item that is rich in carbohydrate and protein can be included in this category. It includes Haleem, a dish that is rich protein content, e. g., pulses meat and contains carbohydrate rich sources including wheat rice, etc. The other one is Kaarhi (yogurt dumpling) comprise of protein sources chickpea flour, yogurt, carbohydrate chickpea flour. Nihari does not fall in this category because fat present in it makes nihari comparatively resistant for unwanted micro-organisms to grow. The vegetable cooked with oil e. g. bhojia something similar to sauté vegetables (except potatoes) are fairly stable and comparatively safer to be store under refrigeration for 3 - 4 days. The key to safe food is fresh cut, fresh ingredients, well cooked and having quick consumption without storing it [1].

Commercially prepared food and safety concern

The same is true for food prepared for commercial purpose. The best place for outdoor dining is one that serves freshly cooked food. In absence of potable water fresh juice is the safest drink to drink. All those food eateries those have compelled with food safety assurance systems like Hazard Analysis Critical Control Point (HACCP) or Good Manufacturer Practices (GMP) with having external independent international audits are safe to dine in. Food Safety Assurance Systems like Good Manufacture Practice (GMP) and Hazard Analysis Critical Control Point (HACCP) define protocols for food processing and storage with having traceability right from sow the seed or birth of an animal upto the consumption of freshly or manufactured food products that ensures food safety within a given food chain while fulfilling the quality criteria expected by consumers. Compliance with GMP is the first stage for achieving the target to deliver safe food. This is expected to be adopted by all stake holders dealing with food including the small ones. Whereas HACCP implication is next step towards achieving confidence in launching safe food. Usually large organizations target for adopting HACCP plans for all their products before acquiring any certification. To validate the efficacy of the quality and safety assurance plans adopted in a food dealing organization and to make them more effective, audits are done on regular basis. Internal audits are done by certain teams comprising of experts having specialties in different domains including the basic sciences, together evaluate the assurance of safety systems adopted. Since there is a possibility for making any type of compromise because of conflict in interests, as all members of teams are associated with same organization or closely linked ones, it is a must to have external audits by inviting professionals from international organizations involved in doing independent food safety audits. I consider it important to mention that most of food manufacturers qualifying on internal audits often fail to launch products meeting international standards, that decreases the export ventures particularly in developing countries, merely because their audits are not done by professionally competent experts or the procedure lacks the transparency [2,3]. All those food eateries having food items production using the localized fresh ingredients having them freshly prepared by those having compelled with food safety assurance systems like Hazard Analysis Critical Control Point (HACCP) or Good Manufacturer Practices (GMP) with having external

audits are generally safe to dine in. Using the localized fresh ingredients having them freshly prepared by those having compelled with food safety assurance systems like Hazard Analysis Critical Control Point (HACCP) or Good Manufacturer Practices (GMP) with having external audits are generally safe to dine in [1,2]. Most of the eateries do not display the list of ingredients present in food items whereas the traceability is missing which increases the risk of presence of allergens (ingredients that can cause allergy) and other hazardous chemicals, micro-organisms etc. harmful to consumers, each may be sensitized to different ingredients, effected by micro-organisms and their metabolites differently [4, 5,7] in addition to several other issues that I have discussed in good detail in my upcoming work based upon on food supply chain management and threats associated with it [8]. Among the packed food, the safest one is the one that carries a well descriptive label having mentioned date of manufacture, expiry date, recommended storage conditions complete list of ingredients, additives e.g. preservatives etc. along with their quantity, presence of possible allergens, product description also including the status in terms of genetic profiling e.g. mention of cultivar species, presence or absence of Genetically Modified Crops or Genetically Modified Organisms etc. Many local manufactures add chemicals to maintain the organoleptic properties, indicative of quality of the product even under the conditions when deterioration of the product has started to prevent the observable changes those otherwise are indicative of unsafe food as well as it can also indicate that the food can have large number of micro-organisms including the diseases causing ones whereas presence of a large range of these chemicals in food can result in causing a wide range of health illness manifestations including the mental illness, many are not yet reported in medical literature occurring by virtue of consuming food containing such hazardous and non food grade chemicals[2-6].

Conclusion

Food prepared domestically or commercially both carry risk for being unsafe. The thumb rule is freshly prepared food in small quantity using fresh locally grown ingredients is generally more safe than commercially manufactured food produced in bulk quantities having extended shelf life particularly those poorly complying with the international standard safety regulations, independently validated locally as well in a given food supply chain system as it can be fatal in case of any compromise on safety issues regarding dealing with food [1,2]. I have discussed the different threads associated food supply chain and their underlying reasons in good detail in work in progress that is a broader version of my earlier piece of work submitted to University of Wageningen Netherlands in 2002 as a pre requisite for the award of Post Graduate Diploma in Food Sciences and Agri business supported by Netherland Fellowship Programme [8]. It's the prime need all over the globe to enforce international food regulations, that is locally independently validated as well with having regular independent international third party audit to ensure food safety and food quality same for all consumers for all edibles available globally [2,4].

Bibliography

1. Rab FA. "Eat Fresh Look Young". *EC Nutrition* RCO.01 (2017): 03-05.
2. Mossel DAA. "Essentials of the microbiology of foods: a textbook for advanced studies". Published in Chichester by Wiley (1995).
3. Rab FA. "Who Should Come in Research". *EC Nutrition* 6.3 (2017): 102-104.
4. Rab FA. "Phenotypic variation in resistance between the individual cells in isogenic populations of *Saccharomyces cerevisiae*". MPhil Thesis, submitted to University of Nottingham United Kingdom (UK) supported by NIH(US) University of Nottingham UK and University of Karachi Pakistan (2007).
5. Rab FA. "Drug- Disease Relationship and role of the Food in Healthy Living Review Paper". *EC Nutrition* 13.8 (2018): 543-548.
6. Rab, FA, "Biotechnology and it's Potentials and Challenges" *EC Agriculture* 3 .4 (2016): 705-707.
7. Rab FA. "A Comparative Study of Immunological Protection Conferred by Certain Antigenic Preparations of *Listeria Monocytogenes*". M.Sc Thesis submitted to University of Karachi Pakistan, supported by University of Karachi Pakistan (1995).
8. Rab FA. "Development of HACCP Plan for Smoked Fish A product of Ouwehand Visverweking BV". Post graduate thesis submitted to University of Wageningen Netherlands supported by Netherlands Fellowship Programme offered by Government of Netherlands (2002).

Volume 14 Issue 5 May 2019

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