



Mini Review Paper

Recent Technological Advances in Food Processing Sector: A Review

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Available online at: www.isca.in, www.isca.me

Received 4th June 2013, revised 11th July 2013, accepted 10th August 2013

Abstract

Food processing involves the conversion of raw ingredients into more acceptable food forms. Food processing is related to crops after harvesting, animal products prepared after slaughtering of animals and converting these products to appeal the general consumers for market profitability and for increasing the storage life of the finished processed products. Animal and fish feeds are also manufactured by this same mechanism of processing.

Keywords: Food processing.

Introduction

There are several advantages of proper food processing under controlled and regulated conditions. It implies the decrease or removal of the content of anti-nutritional factors from the food, increase in shelf-life for prolonged preservation, ease in marketing and increase in consumer demands and increment in the quality and consistency of the finished processed food. It also increases the availability of many food items during off-seasons, increases the convenience in transportation of food items over long distances by decreasing the chances of rotting of mainly perishable food items and increasing the safety for consumption by deleting pathogenic microorganisms which cause spoilage. Food processing at certain places can also be used to reduce the conditions of food shortage and by supplementation of nutritious and safe food for the masses^{1,2}.

Benefits and need and present scenario

As food processing decreases the population or load of pathogenic microorganisms in food and neutralizes the harmful mycotoxins, if present therein. So, it reduces the chances of food-borne diseases caused by microorganisms like Salmonella etc. which can harbor in raw meat and incidences of mycotoxicoses (majorly, aflatoxicosis, ochratoxicosis and zearalenone) due to prolonged improper storage of food thereby causing human illnesses³. Food processing has also gained its importance in the wide variety of diet among people throughout the globe and availability of exotic food items at various places. Processing of food items enhance the taste, flavor and aroma of the food thereby increasing the overall chances of its acceptability among the masses^{2,3}.

Food processing whenever performed in large mass is comparatively cheaper than processing and modification of individual ingredients. So, the food processing sector implies a

huge margin of profit for processed food manufacturers and retailers in the supply chain⁴.

Processing involves various methods among which cooking is a very popular and widely used method which involves the modification by blending etc. of naturally available unprocessed food ingredients. In our nowadays fast paced lifestyle where every family member is on a go for financial security, processed food products have gained its important position in daily livelihood by offering ready prepared wholesome and nutritious meals within short period^{1,4}.

The modern methods of processing decreases the risk of health hazards to consumers from diabetics, allergies etc. Food processing also involves fortification for the production of nutraceuticals and energy supplements with addition of probiotics, prebiotics, certain important vitamins and mineral elements within standard permissible limits which are rather present in natural food in very scarce quantity⁴.

Drawbacks of food processing

There exist certain limitations of food processing also. For example, during processing by heating the concentration of vitamin C is reduced, as it is heat-sensitive. Generally, food processing techniques reduce the nutritional quantity in very negligible amount of nearly 5-20%. Food processing involves the use of food additives, which sometimes prove to be detrimental to public health. For this reason, the European Food Safety Authority (EFSA)⁴ has specified the level of individual feed additive during processing technique and which is approved for safe consumption of human beings. The additives after approval gain an 'E' number (E stand for Europe) which signifies the quantity of the additive to be incorporated in the finished processed food item⁴.

Food processing involves many mechanisms like mixing, grinding, chopping and emulsifying during the whole process of production, which indirectly increase the chances of contamination and admixtures with undesirable foreign elements. Sometimes, packaging containers also pose a threat for public contamination when exposed to thorough procedures of continuous processing by leaching of the chemical components from the containers into the food item to be processed⁴.

In food manufacturing practices, using metal detectors decrease the risk of contamination with metal fragments during the processing technique. In large food processing equipments are fitted with many metal detectors at several positions to negate the chances and risks of metal contamination of processed food products. In 1947, the first industrial purpose metal detector was introduced by Goring Kerr.

Regulatory parameters for governing processing efficiency

Baking is nowadays a more preferable technique of food processing rather than frying on grounds of long-term health benefits and retaining the natural taste and flavor of the finished product. Use of artificial sweeteners and leavening agents also impose long-term serious health risks to regular consumers by acting as diabetics.

The popular processing techniques in food sector are canning, fish processing, industrial rendering, tanneries, meat packing plants, slaughter houses, sugar industries and vegetable packaging plants⁴.

Conclusion

Processing techniques can be lengthy and time consuming sometimes depending on the type of food being processed and it needs the control and regulation of certain parameters for processing which includes hygiene which is assessed by the microbial load in the processed food product, efficiency in energy utilization, minimum waste generation, effective labor saving and minimization of cleaning requirements. Hygiene protocols for the finished processed food product are evaluated as per HACCP guidelines to minimize the risk of potential health hazards among consumers⁵⁻⁹.

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