



Principles of Food Preservation

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Abstract

The surrounding environment and the food itself may induce deterioration of food items through chemical, enzyme, and microbiological activity. In the meanwhile, the recent rise in the world's population requires the stocking and delivery of food supplies from one area to another. During delivery, food goods are beginning to degrade, becoming deteriorating and nutritional qualities are decreasing. This may be resolved by prolonging food product shelf-life, stabilising its quality, retaining its aspect and flavour by means of food storage procedures such as heating, pickling, edible coated, drying, freezing and high-pressure processing. The contemporary preservation method and conventional preservation methods include two kinds of food preservation. Conventional food preservations employ natural food preservatives in the meanwhile. In the meantime, the synthetic preservatives, including sulphites, benzoates, sorbates, etc., might lead to specific health issues for food preservation. In this perspective, it is far safer for humans and the environment for these synthetic conservants to be replaced by natural conservants like as salt, vinegar, sweet, etc. In addition, natural conservants are easy to get, as plant, animal and microbial sources come from these sources.

INTRODUCTION

Food preservation refers to a variety of techniques for keeping food from spoiling after it has been harvested or slaughtered. This is prehistoric practise. Drying, cooling and fermentation are among the earliest conservation processes. Canning, pasteurisation, freezing, radiation and the addition of chemicals are modern methodologies. In modern food preservation, progress in the use of packing materials has played a major impact. Food preservation strategies include those that inhibit the growth of germs like yeasts (although other methods work by adding harmless bacteria or fungus to the food) and reduce the oxidation of lipids that produce rancidity. Processes that prevent aesthetic degradation, such as the enzymatic browning response in apples after they are sliced during food preparation, are examples of food preservation. Food waste may be minimised by preserving food, which is an essential approach to lower production costs and enhance food system efficiency, improve food security and nutrition, and contribute to environmental sustainability.

Why food Preservation is important?

Food preservation aids in the following ways:

- Extending the shelf life of foods, hence increasing

supply. Many perishable items may be kept for an extended period of time

- Making seasonal foods available all year
- Increasing the diet's variability
- Save time and energy by decreasing the amount of time and energy required to prepare the meal because it has already been partially processed
- Food prices will be more stable, as there would be less of a supply-demand gap
- Reducing food waste by avoiding food deterioration or spoiling
- Improving the population's nutrition. Preserved foods help consumers add variability to their diets, reducing nutritional deficiencies

Food Preservation principles:

(A) Delay in microorganism growth

- i. Avoiding microorganism invasion e.g. using aseptic procedures
- ii. Removal of microbes e.g. filtration
- iii. Inhibiting microorganism growth and activity e.g.

freezing, refrigeration, drying, anaerobic conditions, chemicals or medicines

iv. Using heat or irradiation to kill microorganisms

(B) Delay in self decomposition

i. Destruction or inactivation of intrinsic enzymes naturally present in food, such as by blanching

ii. Prevention or delay of chemical processes, such as oxidation prevention by employing antioxidants

(C) Destruction caused by insects or animals is prevented

i. Using appropriate pesticides to prevent insects or animals from spoiling the food

ii. By keeping food in dry, airtight containers to protect them from insects and animals

Food Preservation Methods

Traditional Methods: Drying, cooling, freezing, heating, boiling, salting, sugaring, smoking, pickling, canning.

Modern and industrial methods: Pasteurization, vacuum packing, artificial food additives, irradiation, modified atmosphere, non-thermal plasma, high-pressure, food preservation, biopreservation, hurdle technology.

CONCLUSION

Different food storage strategies for traditional and innovative ways of preservation have become offered in recent years. The methods employed for preserving foodstuffs should thus be suited for the circumstances in which foodstuffs are maintained because not all these procedures are able to keep their freshness and organoleptic characteristics. Pickling, for instance, changes its taste, texture and appearance. The choice of techniques of food preservation should rely on the aims of food consumption afterwards. The preservation of foodstuffs was frequently utilised to prevent food-borne pathogens. Conserving the effect of using chemical preservatives, natural preservatives has acquired popularity.