Modern Technology on Food Preservation (2nd Edition)

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Format: paperback
Code: NI88
Pages: 528
Price: Rs.1275**US$** 125
Publisher: NIIR PROJECT CONSULTANCY SERVICES
Usually ships within **5** days

Food Preservation has become an integral part of the food processing industry. There are various methods of food preservation; drying, canning, freezing, food processing etc. Food processing is one the method of food preservation which is the set of methods and techniques used to transform raw ingredients into food or to transform food into other forms for consumption by humans or animals either in the home or by the food processing industry. Canning is one of the various methods of food preservation in which the food is processed and then sealed in an airtight container. This process prevents microorganisms from entering and proliferating inside. Dehydration is the process of removing water or moisture from a food product. Food dehydration is safe because water is removed from the food. Freezing is also one of the most commonly used processes commercially and domestically for preserving a very wide range of food including prepared food stuffs which would not have required freezing in their unprepared state. Benefits of food processing include toxin removal, preservation, easing marketing and distribution tasks, and increasing food consistency. In addition, it increases seasonal availability of many foods, enables transportation of delicate perishable foods across long distances and makes many kinds of foods safe to eat by deactivating spoilage and pathogenic micro organisms. Nanotechnology exhibits great potential for the food industry. New methods for processing nanostructures are being developed having novel properties that were not previously possible. As such, due to the recent up gradation of preservation techniques, the preservation industry is also growing almost at the same rate as the food industry which is about 10 to 12% per year. The purpose of this book is to present the elements of the technology of food preservation. It deals with the products prepared from various fruits and vegetables commercially. Relevant information on enzymes, colours, additives, flavours, adulteration, etc., has been given. This book also contains photographs of equipments and machineries used in food preservation. This book will be very useful for new entrepreneurs, food technologists, industrialists, libraries etc.

Influence of Freezing on Parasites
Thawing Damage to Frozen Foods

5. Principles of Food Preservation by drying
Drying a Natural Process
Dehydration-Artificial Drying
Dehydration vs. Sun Drying
Why Dried Foods
Dehydration Permits Food Preservation
Humidity-Water Vapor Content of Air
Air-The Drying Medium
Adiabatic Driers
Heat Transfer Through a Solid Surface
Criteria of Success in Dehydrated Foods
Freeze-Dehydration (Freeze Drying)
Triple Point of Water
Temperature Changes in Meat Freeze-Dehydration
Influence of Dehydration on Nutritive Value of Food
Influence of Drying on Micro-organisms
Influence of Drying on Enzyme Activity
Influence of Drying on Pigments in Foods
Dehydration of Fruits
Dehydration of Vegetables
Dehydration of Meat
Dehydration of Fish
Dehydration of Milk
Dehydration of Eggs
Packing of Dehydrated Foods
Influence of Drying on Food Acceptance

6. Principles of Food Preservation by Canning
The Art of "Appertizing"
Temperature vs. Pressure of Boiling Water
Spoilage of Food Caused by Micro-organisms
Evolution of Containers for Canning
Important Food Groups
Micro-organisms Associated with the Food Groups
Sources of Spoilage Organisms
Heat Resistance of Micro-organisms
Important in Canning
Factors Influencing the Heat Resistance of Spores
Influence of Food Ingredients on Heat Resistance
of Spores
Heat Resistance of Enzymes in Food
Heat Penetration into Food Containers and Contents
General Method for Calculating the Process Time
for Canned Foods
Inoculated Pack Studies
Adequacy of Heat Processes
Spoilage of Canned Foods
Microbial Spoilage
Failure of Glass Containers
Surface Markings on Broken Glass

12. Principles and Preservation of Bakery Products
Introduction
Principles of Baking
Dough
Influence of Flour Proteins
Flour Improvers
Other Components of Flour
Yeast Raised Dough Products
Heat Generated During Mixing Doughs
Heat of Hydration
Cooling Requirements
Continuous Bread Making Process
Typical Formulations for Yeast Raised Bakery Products
Baking Schedules
Baking Reactions
Chemically Leavened Bakery Products
Leavening Acids
Baking Powders
Elements of Cookie Technology
Cookie Flour
Sugar
Shortening
Eggs
Ammonia
Water
Baking Acids
Soda
Miscellaneous Ingredients
Mixing and Baking
Quality Cookie Chart
Elements of Cake Technology
General Rules for Formulating Cakes
Cake Formulations
Principles of Processing Cakes
Baking
Refrigerated Doughs
Preservation of Bakery Products
Fresh Bakery Products
Freezing of Bakery Products
Packaging
Storage Life of Frozen Bread
Cookies and Cakes
Nutrient Losses in Bakery Products
Packaged Fresh Bread
Packaged Fresh Cookies, Crackers, Bakery Goods, Cake Mixes
The Future

13. Storage Stability of Preserved Foods
Introduction

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Thu, 01 May 2025 10:30:16 +0000