

# The Complete Book on Fruits, Vegetables and Food Processing

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Food processing is the transformation of raw ingredients into food, or of food into other forms. Food processing typically takes clean, harvested crops or butchered animal products and uses these to produce attractive, marketable and often long shelf-life food products. Benefits of food processing include toxin removal, preservation, easing marketing and distribution tasks, and increasing food consistency. In addition, it increases yearly availability of many foods, enables transportation of delicate perishable foods across long distances and makes many kinds of foods safe to eat by de-activating spoilage and pathogenic micro-organisms. Processed foods are usually less susceptible to early spoilage than fresh foods and are better suited for long distance transportation from the source to the consumer. The extremely varied modern diet is only truly possible on a wide scale because of food processing. Food Dehydration is a method of food preservation that works by removing water from the food, which inhibits the growth of microorganisms. The dehydration process has to check various parameters like heat-mass transfer, atmospheric pressure, equipments suitable for drying etc. to ensure suitable dehydration of food. Food processing techniques have to take measures on to maintain food safety and control risks and hazards associated with food processing.

The book includes dehydration process of Onion, roasting of coffee beans, development process of Guava squash, preparation of fried potato chips, processing of rice, butter and margarine, canning of chilies Plums, processing and preservation of jack fruit, characteristics of sweetened dahi, cereal grains, instant chutneys from pudina and gongura, starch isolated from potato tubers, coating of cashew kernel baby bits, ripening changes in mango fruits, mechanical and thermal properties of maize, storage of basmati rice under carbon dioxide-rich atmosphere, effect of different varieties of soya bean on quality of paneer, analysis of menthol content in pan masala samples, preparation of dehydrated potato cubes, quality evaluation of raw dried mango slices khatai and mango powder amchur, packaging and storage of biscuits containing finger millet flour, storage effect on microbial safety of potato flour, processing and quality evaluation of ready-to-eat watermelon nectars etc. The book is highly recommended to new entrepreneurs, existing units who wants to get more information of processing of fruits and vegetables.

Storage of Basmati Rice Under Carbon Dioxide - Rich Atmosphere

Materials and Method, Results and Discussion, Conclusion

2. Storage Stability of Instant Vegetable Pulav Mix

Materials and Methods, Results and Discussion

3. Food Dehydration and Concentration

Food Dehydration, Heat and Mass Transfer, Surface Area, Temperature, Air Velocity, Humidity, Atmospheric Pressure and Vacuum, Evaporation and Temperature, Time and Temperature, Normal Drying Curve, Effects of Food Properties on Dehydration, Constituent Orientation, Solute Concentration, Binding of Water, Cellular Structure, Shrinkage, Case Hardening, Thermoplasticity, Porosity, Chemical Changes, Optimization of Variables, Drying Methods and Equipment, Air Convection Driers, Kiln Drier, Cabinet, Tray, and Pan Driers, Tunnel and Continuous Belt Driers, Belt Trough Drier, Air Lift Drier, Fluidized-Bed Drier, Spray Driers, Drum or Roller Driers, Vacuum Driers, Vacuum Shelf Dries, Continuous Vacuum Belt Drier, Freeze-Drying, Atmospheric Drying of Foams, Food Concentration, Preservative Effects, Reduced Weight and Volume, Methods of Concentration, Solar Concentration, Open Kettles, Flash Evaporators, Thin-Film Evaporators, Vacuum Evaporators, Freeze Concentration, Ultrafiltration and Reverse Osmosis, Changes During Concentration, Intermediate-moisture Foods, Principles Underlying Technology, Determining Water Activity, Products and Technology

4. Dehydration of Onions

5. Mechanical and Thermal Properties of Maize

Materials and Methods, Results and Discussion

6. D-Value of Trypsin Inhibitor in Soybeans in Tomato Sauce

7. Roasting of Coffee Beans

Roasting process, Physical properties, Swelling ratio,

Breaking strength, Colour value, Organoleptic evaluation

8. Canning of Chili Plums (*Spondias purpurea* var. *lutea*) in Syrup

Materials and Methods, Canning, Sensory evaluation, Chemical analysis, Physical analysis, Microbial analysis, Statistical analysis, Results and Discussion, Storage methods, Sensory evaluation, Chemical composition,

Cut-out analysis, Microbial analysis, Conclusion:

9. Development of Process for Guava Squash

Effect of the method of preparation of extract and its energy consumption during boiling, Effect of the method of boiling during concentration on energy consumption, Effect of method of preparation on the acceptability of colour of squash, Effect of method of preparation of squash on its other sensory attributes

10. Microbiological, Chemical and Ultrastructural Characteristics of Mishti Doi (Sweetened Dahi)

Microbiological analysis, Chemical analysis, Preparation of sample for SEM

11. Processing and Preservation of Jack Fruit (*Artocarpus heterophyllus* L.) Bar (Thandra)

12. Instant Chutneys from Pudina (Mint, *Mentha spicata*) and Gongura (*Hibiscus* sp)

13. Cereal Grains; Legumes, and Oilseeds

Cereal Grains, General Composition and Structure, Wheat, Conventional Milling, Uses of Wheat Flour and Granules, Rice, Milling, Enrichment, Improved Varieties, Rice Products, Corn, Dry Milling, Wet Milling, Corn Sugars, Alcohol from Corn, Barley, Oats, Rye, Breakfast Cereals, Some Principles of Baking, Major Baking Ingredients and Their Functions, Gluten and Starch of Wheat Flour, Leavening Agents, Yeast, Baking Powders, Eggs, Shortening, Sugar, The Baking Step, Legumes and Oilseeds, General Compositions, Protein Supplementation and Complementation, Soybean Technology, Peanuts, Some Special Problems

14. Effect of Different Varieties of Soybean on Quality of Paneer

15. Effect of Temperature on Rheological Characteristics of Garlic and Onion Pastes

16. Tray Over-wrapping of 'Mosambi' Sweet Orange

17. Analysis of Menthol Content in Pan Masala Samples

18. Effect of Processing on Mancozeb Residues in Apple

19. Sensory and Yield Response Surface Analysis of Supercritical CO<sub>2</sub> Extracted Aromatic Oil from

Roasted Coffee

Materials and Methods, Results and Discussion

20. Effect of Pre-treatments on Quality of Soypaneer

21. Use of Isabgol (*Psyllium mucilloid*) Husk in Atta for Chapati Making

22. Air Drying Behaviour of Osmotically Dehydrated Pineapple  
Theoretical consideration, Materials and Methods, Results and Discussion, Conclusion
23. Studies on Suitability of Cultivar, Frying Medium and Packaging for Potato Chips
24. Use of Sorbitol for the Preparation of Plum Seasoned Squash
25. MilleT-based Food Products for Diabetics
26. Defatted Mucuna Flour in Biscuits Formulation
27. Effect of incorporation of Liquid Dairy by-products  
on Chemical Characteristics of Soy-fortified Biscuits
28. Effect of Hydrocolloids on the Rheology of Tamarind Sauce  
Materials and Methods, Results and Discussion
29. Optimization of Process Variables for Preparation of Fresh Fried Potato Chips
30. Effect of Modified Atmosphere Packaging on Low Molecular Weight Carbohydrates of  
Oyster  
Mushrooms  
Materials and Methods, Results and Discussion
31. Starch Isolated from Potato Tubers (*Solanum tuberosum* L.)  
Materials and Methods, Results and Discussion, Conclusions
32. Processing and Quality Evaluation of Ready-to- eat Watermelon Nectars
33. Pre-treatment Effect on Drying Characteristics and  
Colour of Dehydrated Green Chillis
34. Mass Transfer During Melon Processing by Combined Methods  
Materials and Methods, Results and Discussion
35. Effect of Rice Bran and Palm Oil on the Lipid and Fatty Acid Composition of Brain Tissue  
Materials and Methods, Results and Discussion
36. Storage Effect on Microbial Safety of Potato Flour
37. In vitro and In vivo Availability of Iron from Bathua (*Chenopodium album*) and Spinach  
(*Spinacia oleracea*) Leaves  
Materials and Methods, Results and Discussion, Conclusion
38. Packaging and Storage of Biscuits Containing Finger Millet (Ragi) Flour
39. Quality Evaluation of Raw Dried Mango Slices Khatai  
and Mango Powder Amchur  
Materials and Methods, Results and Discussion
40. Development of a Chemically Leavened Cereal-Legume Based Instant Mix (Dhokla)  
Materials and Methods, Results and Discussion, Effect of different process parameters and  
ingredients, Conclusion
41. Vegetables and Fruits  
General Properties, Gross Composition, Structural Features, Turgor and Texture, Cell Turgor,  
Other Factors Affecting Texture, Cellulose, Hemicellulose, and Lignin, Pectic Substances,  
Starch, Color and Color Changes, Chlorophylls, Carotenoids, Anthocyanins, Flavonoids,  
Tannins, Betalains, Activities of Living Systems, Harvesting and Processing of Vegetables,  
Varietal Differences, Harvesting and Preprocessing Considerations, Postharvest Practices,  
Washing, Skin Removal, Cutting and Trimming , Blanching, Canning, Harvesting and  
Processing of Fruits, Varietal Differences, Fruit Quality, When to Pick, Quality Measurements,  
Harvesting and Processing, Freezing, Heat Blanching, Ascorbic Acid Dip, Sulfur Dioxide Dip,  
Sugar Syrup, Vacuum Treatment, Concentration and Drying, Fruit Juices, Extraction,  
Clarification, Deaeration, Additional Steps, Biotechnology,
42. Coating of Cashew Kernel Baby Bits, Materials and  
Methods, Results and Discussion, Conclusion
43. Moisture Content and Temperature Effects on  
thermal Properties of Potato  
Materials and Methods, Results and Discussion
44. Concentration and Temperature effect on the Rheology  
of Mango Pulp

45. Rheological Properties of Fried Paneer by Response Surface Methodology  
Materials and Methods, Results and Discussion
46. Phenolic Antioxidants of Common Pulses
47. Preparation of Dehydrated Potato Cubes  
Materials and Methods, Results and Discussion
48. Strength Properties of Soybean Grain in Axial Compression
49. Sensory Evaluation, b-carotene Retention and Shelf-life of Dehydrated Carrot Products  
Drying behaviour and b-carotene retention in dehydrated carrots
50. Utilization and Evaluation of Potato, Cocoyam and Wheat Flour Composite for Bread Preparation
51. Improved Cooking Quality Test for Basmati Rice  
Materials and Methods, Results and Discussion, Conclusion
52. Processing of Rice  
Introduction, Quality of Rice, Milling of Rice, Small-scale Milling, Modern Conventional Milling, Lye-peeling, Turbo-milling, Abrasive Milling of Rice, Extractive Milling, Rice Flour, Further Processing of Rice, Parboiling, Traditional methods, Boiling and Steaming, Properties, Storage changes, Expanded parboiled rice, Quick-cooking Rice, Shelf-stable Cooked Rice, Canned rice, Frozen cooked rice, Rice Cakes, Rice Milk, Enrichment, Vitamins and Minerals, Amino Acids, Uses for by-Products
53. Ripening Changes in Mango (*Mangifera Indica* L.) Fruits
54. Cottage Industry for Dehydrating Whole Egg
55. Butter and Margarine  
Butter Varieties and Grades, Structure and Composition, Flavour and Aroma, Consistency and Texture, Spoilage, Butter Manufacture, Margarine, Flavour, Consistency, Ingredients, Margarine Manufacture, Deteriorations
56. Food Safety, Risks And Hazards  
Introduction, Safety, Hazards, And Risks, Food-related Hazards, Biological Hazards, Nutrition-Related Diseases, Trace Chemicals, Direct Food Additives and Macrocomponents of Foods, Physical Hazards, Microbiological Considerations In Food Safety, Effects of Processing And Storage on Microbial Safety, Freezing And Refrigeration, Minimally Processed and New Foods, Microbiological Methodology, Haccp as a Method to Prevent Food-borne Illness, Chemical Hazards Associated With Foods, Broad Classes of Intentional Food Additives, Preservatives, Antioxidants, Sequestrants, Surface Active Agents, Stabilizers and Thickeners, Bleaching and Maturing Agents, Starch Modifiers, Buffers, Acids, Alkalies, Food Colors, Artificial Sweeteners, Nutritional Additives, Flavoring Agents, Miscellaneous Additives, Macro-components and Foods Substitutes

## About NIIR

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Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line.

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