# Fresh Meat Technology Handbook

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**SERVICES** 

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The origin of meat processing is lost in antiquity but probably began when primitive humans first learned that salt is an effective preservative and that cooking prolongs the keeping quality of fresh meat. This book includes the processing of fresh meats, the different curing agents, method of curing, smoking and manufacturing of various meat products such as sausages, canned meat, cured and smoked meats etc. The book is very useful for entrepreneurs, technocrats and those who want to venture in to this field.

Note: This book is also known as 'The Complete Book on Meat Processing And Preservation with Packaging Technology', NI162. 1. MEAT PRODUCT

Curing

Comminution

**Smoking** 

Canning

Freezing

Dehydration

**By-Products** 

2. TENDERNESS

Feed Additivies

**Balanced Electrolyte Composition** 

Ante-Mortem Enzyme and other Treatments

Stabilized, Purified Enzyme Preparation

Enzyme and Antibiotic Synergism

Controlled Enzyme Distribution

Uniform Enzyme Distribution

Treated and Standardized Enzyme Solution

Activators of Natural Proteolytic Enzymes

Collagen Diminution Agents

Reversibly Inactivated Enzymes

Pre-Rigor Mortis Enzyme Treatment

Enzyme and Antibiotic Synergism

Tenderization of Connective Tissue

Cold Water Buffered Enzyme Solution

Isotonic Enzyme Solution with Specific Activity

Buffered Enzyme Combined with Gelatin

**Pre-Rigor Mortis Injection** 

Water Injection

Water and Gas Injection

Water and Cellulose Gum Injection

Whole Blood or Whole Milk Injection

Post-Rigor Mortis Enzyme Treatment

**Tenderizer Composition** 

**Aerosol Tenderizing Compositions** 

Enzyme with Higher Sodium Phosphates

Enzyme with Basic Pyrophosphate Salts

Balanced Activity of Papain and Bromelin

Enzyme with Nonlinear Phosphates in Saline

Enyme and Fat Combination

Gas as Tenderizer Carrier

Inactivation of Enzymes with High Pressure

Carbon Dioxide or Oxygen Atmosphere

Enzyme, Chelating Agent, and Starch

Tragacanth Addition

Meat Pieces with Tenderized Core

Aging at Elevated and Controlled Temperatures

Variable Dew Point Control

Vacuum Packaged Cuts

**Diathermal Heating** 

Controlled Atmosphere

Electron Beam Generator Radiation

Forced Dry Air Circulation

Treatment with Additives

Sodium Chloride and Pyrophosphate Synergism

Increased Injection Level of Sodium

Chloride and Phosphate

Marination and Refrigeration

Sodium Bicarbonate and Vinegar

Treatment with High-Pressure Gaseous Atmosphere

Oxygen

Carbon Dioxide

Solution Applicaion Devices

**Automatic Spraying Apparatus** 

**Jet Injection Apparatus** 

Mechanical Tenderizing

Composite Steaks by Mechanical Method

Composite Steaks by Cryogenic Method

Compressed Cuts Mechanically Tenderized

Action of Supersonic Energy

Isometric Tensioning

Method for Tenderness Measurement

**Tenderness Measuring Apparatus** 

3. FLAVOUR AND TENDRENES

Simultaneous Flavouring and Tenderzing

Action of Molds and Bacteria

Action of Thamnidium elegans

Pre-Rigor Mortis Injection of Aspergillus niger Mycelium

Acid Activation of Thamnidium elegans

Anta-Mortem injection or Thamnidium and Aspergillus

Thamnidium and Antibiotic Synergism

Action of Pseudomonas and Achromobacter

Combined Action of Flavouring and

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Monosodium Glutamate Eliminates Mutton Flavour

Application of Dry Tenderizer and Flavouring Materials

Inhibition of Warmed-Over Flavour

### 4. FLAVOURING

Meat Hyorolystates and Extracts

Acid Hydrolysis of Water-Insoluble Meat Residue

Fractionation of the Flavour Precursor

Hydrolysis of Meat

Bone Hydrolysates and Extracts

Continuous Counterflow Hydrolysis

Continuous Hydrolysis

Protein Hydrolysate

Synthetic Flavouring

Cysteine and Glyceraldehyde Base

Cysteine and Ribose

Derivatives of Mercapto-Acetaldehyde

a- Ketobutyrate, Inosinate, and Glutamate Base

Nitrite and Amino Acids

Cysteine, Sugar, Inosinate, and Protein Hydrolysate Base

Cysteine, Thiamine and Proteinaceous Substance Base

Ribose, Glycerol, Proline, Cysteine, and Methionine

Amino-Carbonyl Complexes from Protein Hydrolysates

Heat-Treated Slurried Meat and Ascorbic Acid

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Adrenalin and Ascorbic Acid

Treatment with Gaseous Atmosphere

Carbon Monoxide

Oxygen Under Pressure

Ammonia

Hemoglobin Base Colouring Compositions

Stable Compositions in Liquid and Paste Form

Compositions in Dry Powder Form

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Certified Monoazo Red Dyes

Ascorbate, Phosphate, and Citrate

Ascorbate, Gelatin, and Monosodium Glutamate

**Imidazole** 

Metal Ions Ashed from Biological Tissues

Beta-Carotene

Nicotinic Acid Spray

Mechanical Treatment

Removal of Residual Blood

Protection of Bone Colour of Primal Cuts

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Mechanical Pricking to Release Exudate and

Freezing to Integrate

Compression to Release Exudate

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Polyphosphate Injection

Repeated Slow Freezing and Thawing

**Bindingd Agents** 

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**Binding Matrix** 

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SURFACE PROTECTION

Long Chain Hydrocarbon Coating

Fatty Alcohol or Fatty Acid Protective Film

Preliminary Ice Coating

Intermediate Glycerol Layer

Intermediate Water Layer

Lactic Acid-Fatty Acid Triglycerides

Water-in-Oil Emulsion Containing Gum

Mixture of Mono- and Diglycerides in Oil

Acetylated Monoglycerides

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Ethylcellulose Plasticized with Mineral Oil

Ethylcellulose Plasticized with Edible Oil

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Ante-Mortem or Post-Mortem Injection

Combined with Air-Tight Packaging

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Coated or Impregnated Packaging Material

Addition of Nystatin or Myprozine

Various an Timicrobal and An Timacrobial Agents

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Sterilization with Nitric Oxide Atmosphere

Ethylene and/or Propylene Oxide to Destroy Trichinae

Increased Acidity to Destroy Foot-and-Mouth Virus

High Pressure Carbon Dioxide or Oxygen Atmosphere

Thermal Decontamination and

Oxygen Impermeable Packaging

Chlorine-Containing Aqueous Spray Solution

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Combusted Fuel Gas Atmosphere to Improve Flavour Ante-Mortem Adrenalin Injection to Retard Enzymatic Deterioration Antibiotic and Sorbic acid Treatment Saline Medium to Elminate off-Flavours Sodium Chloride and NitrIte ir Nitrate as **Bacterlal Spore Sensitizers** Sterilization with Carbon Dioxide under Pressure Sodium Chloride Treatment Prior to Blanching **Irradiation Apparatus** Design of a Resonant Transformer Type Cathode Ray Irradiator 10. OTHER METHODS OF PRESERVATION **Dehydration Methods** Solvent Dehydration **Drying Without Case Hardening** Preservation of Flavor Antioxidant Application to Freeze-Dried Meats Deodorization of Raw Meat 11. PACKAGING AND HANDLING FOR STORAGE AND TRANSPORTATION Various Methods of Packaging Vacuum Packaging and Storage Below 5°C Hot Carcass Processing and Impermeable Packaging Vacuum Packaging and Hot Water Spraying **Processing of Partially Cooled Carcass Controlled Atmosphere Environment** Cryogenic Oxygen-Nitrogen Atmosphere Carbon Dioxide-Oxygen-Nitrogen Atmosphere 12. COOKING METHODS Brolling in Oxtgen-free atmosphere with Intense Infrared Heat Continuous Steam Cooking of Ground Meat Controlled Electrical Cooking High Pressure Roasting in Air Medium Cooking Between Compressed Plates Roasting in Suspended State **Directory Section** 1. MEAT PRODUCT

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Vacuum Packaging and Storage Below 5°C

Hot Carcass Processing and Impermeable Packaging

Vacuum Packaging and Hot Water Spraying

Processing of Partially Cooled Carcass

**Controlled Atmosphere Environment** 

Cryogenic Oxygen-Nitrogen Atmosphere

Carbon Dioxide-Oxygen-Nitrogen Atmosphere

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Brolling in Oxtgen-free atmosphere with

Intense Infrared Heat

Continuous Steam Cooking of Ground Meat

Controlled Electrical Cooking

High Pressure Roasting in Air Medium

Cooking Between Compressed Plates

Roasting in Suspended State

**Directory Section** 

## About NIIR

**NIIR PROJECT CONSULTANCY SERVICES (NPCS)** is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

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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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