Institute of Post Harvest Technology

Overview

The **Institute of Post Harvest Technology** conducts research to ascertain and improve post harvest technology applicable to aquatic resources. The division is internationally accredited and plays a vital role in ensuring quality and safety of fishery products for both domestic consumption and export markets.

The division's work encompasses the entire value chain from harvest to consumer, addressing critical issues of food safety, quality control, product development, and post-harvest loss minimization. With accreditation from the Sri Lanka Accreditation Board, the division provides internationally recognized testing services essential for Sri Lanka's fishery export industry.

Leadership & Contact

Head of Division

- **Position:** Head / Post Harvest Technology Division (Currently Vacant)
- **Phone:** +94-11-2529715

Applications are invited for this critical leadership position. Please contact NARA administration for current interim arrangements.

Key Functions & Responsibilities

Food Processing Technology

- Introduction of new food processing technologies for locally available underutilized aquatic resources
- Development of improved hygienic processing techniques for traditional fish products
- Product development for domestic and export markets
- Technology optimization for small and medium enterprises
- Scaling of laboratory processes to commercial production

Quality Assurance & Food Safety

- Microbiological assessment of fish and fishery products
- Chemical analysis for contaminants and adulterants
- Food preservation technology research
- Quality control protocol development
- Hazard Analysis and Critical Control Points (HACCP) implementation support

Post-Harvest Loss Mitigation

- Investigation of post-harvest losses throughout the value chain
- Development of measures to minimize losses in fishing operations
- Improvement of onboard fish handling practices
- Cold chain management optimization
- Storage and transportation technology enhancement

Health & Safety Research

- Research on chemical residues in fish and fishery products
- Antibiotic residue detection and monitoring
- Biotoxin screening in seafood
- Investigation of resistant pathogens
- Food safety risk assessment

Value Addition & Product Development

- Extraction technologies for bioactive compounds
- Development of nutraceuticals from marine resources
- Traditional product improvement
- Novel product formulation
- Market-oriented product innovation

Services Offered

Laboratory Testing Services

The division operates an **accredited laboratory** certified by the Sri Lanka Accreditation Board, offering comprehensive testing services:

Microbiological Analysis

- *Salmonella* detection in fish products
- *Escherichia coli* enumeration
- *Vibrio* species identification and quantification
- *Listeria monocytogenes* testing
- Total plate count and specific bacterial pathogens
- Shelf life studies

Chemical Analysis

- **Histamine Testing:** Critical for scombroid fish species export compliance
- Heavy metal analysis (mercury, lead, cadmium, arsenic)
- Chemical preservative detection
- Antibiotic residue screening
- Proximate composition analysis (protein, fat, moisture, ash)
- pH and salt content determination

Sample Types Accepted

- Fresh and frozen fish
- Processed fish products
- Shellfish and crustaceans
- Canned products
- Water and ice from fishing vessels
- Food processing environment samples

Consultancy Services

- Food processing technology consultation
- Quality management system development
- HACCP plan preparation and implementation
- Product formulation assistance
- Export compliance guidance
- Process optimization for industry

Technology Transfer

- Training on improved fish processing methods
- Demonstration of value-added product preparation
- Technical support for entrepreneurs
- Small business development support
- Transfer of developed technologies to industry

Product Technologies for Investment Opportunities

The division has developed numerous product technologies ready for commercial adoption:

Fish-Based Products

Fish Minced Products

- Surimi-based products from underutilized species
- Fish fingers and nuggets
- Ready-to-cook fish products

Fish Burgers

- Multiple recipe formulations
- Nutritionally balanced compositions
- Extended shelf life formulations

Fish Sausages

- Traditional and innovative flavors
- Culturally appropriate formulations
- Commercial-scale production protocols

Fish Paste

- Versatile cooking ingredient
- Long shelf life products
- Value addition from low-value species

Ready-to-Eat Products

Smoked Fish Products

- Ready-to-eat smoked fish with extended shelf life
- Canned smoked fish for export markets
- Traditional smoking technique improvements
- Modern smoking technologies

Ready-to-Cook Products

- Marinated fish products
- Portion-controlled packaging
- Convenience food formulations

Traditional Products Enhancement

Fermented Fish Products

- Improved fish sauce production
- Traditional jaadi with enhanced quality

- Standardized fermentation protocols
- Food safety assurance in fermented products

Dried Fish Products

- Hygienic drying methods for large fish varieties
- Small fish solar drying improvements
- Packaging and storage optimization

Maldive Fish Industry

- New equipment set for improved processing
- Consistent quality production
- Value-added products (flakes, sambal, powder)
- Quality grading systems

Extraction Technologies

Chitin and Chitosan

- Extraction from shellfish waste (prawn, crab, lobster shells)
- High-purity chitosan production
- Applications in food, pharmaceutical, and cosmetic industries
- Commercial-scale extraction protocols

Gelatin and Collagen

- Extraction from fish skin and bones
- Different fish species optimization
- Halal-certified fish gelatin
- Cosmeceutical applications

Fish Oil and Omega-3

- Fish oil extraction from fish waste
- Detailed lipid profile analysis
- Omega-3 fatty acid concentration
- Pharmaceutical and nutraceutical applications

Fish Protein Hydrolysate

- Enzymatic hydrolysis technology
- Bioactive peptide production
- Nutritional supplement development
- Fish powder for food fortification

Seaweed Products

Seaweed Extracts

- Agar extraction technology
- Carrageenan production protocols
- Industrial hydrocolloid production

Seaweed Food Products

- Seaweed yoghurt formulations
- Seaweed dessert jellies (multiple flavors)
- Seaweed jam with fruit combinations
- Nori sheet production for sushi industry

Nutritional Products

- Seaweed-based health supplements
- Functional food ingredients
- Mineral-rich seaweed powders

Bivalve Value Addition

- Oyster product development
- Mussel processing technologies
- Clam-based products
- Quality improvement of bivalve products

Facilities & Equipment

Microbiological Laboratory

- Biosafety cabinets
- Autoclaves and sterilization equipment
- Incubators (multiple temperature settings)
- Microscopes (light and fluorescence)
- Colony counters and enumeration systems
- Media preparation facilities
- Sample preparation areas

Chemical Analysis Laboratory

- High-Performance Liquid Chromatography (HPLC) for histamine analysis
- Atomic Absorption Spectrophotometer for heavy metals
- Spectrophotometers (UV-Vis)
- pH meters and titration equipment
- Fat extractors (Soxhlet)
- Protein analyzers (Kjeldahl)
- Moisture analyzers

Food Processing Pilot Plant

- Fish mincing and processing equipment
- Smoking units (traditional and modern)
- Drying facilities (solar and mechanical)
- Canning equipment and retorts
- Freezing and cold storage facilities
- Packaging equipment
- Product development kitchen

Specialized Equipment

- Extraction equipment for bioactive compounds
- Freeze dryers for sensitive products
- Homogenizers and emulsifiers
- Fermentation vessels
- Quality control instruments

Major Research Findings

Post-Harvest Loss Assessment

The division's research has revealed critical findings:

- **40% post-harvest quality loss** in multi-day fishing vessel operations
- **Monetary loss of Rs. 22.5 billion annually** due to poor fish handling
- Primary causes: inadequate insulation in fish holds and ice melting during extended sea voyages
- Urgent need for improved onboard refrigeration systems

This research has prompted policy discussions on:

- Mandatory refrigeration for multi-day vessels

- Improved ice production and distribution
- Fisher training on quality management
- Cold chain infrastructure development

Accreditation & Quality Standards

Sri Lanka Accreditation Board (SLAB) Accreditation

- ISO/IEC 17025 accredited testing laboratory
- Regular proficiency testing participation
- International recognition of test results
- Strict quality management systems
- Continuous improvement protocols

The accreditation enables:

- Export certification support
- Internationally accepted test reports
- Regulatory compliance verification
- Industry confidence in results

Major Achievements

- Established accredited laboratory maintaining international standards
- Developed numerous ready-to-market product technologies
- Identified critical post-harvest loss issues with economic quantification
- Supported fishery product export industry with quality testing
- Technology transfer to numerous small and medium enterprises
- Contributed to food security through reduced losses
- Developed value-added products from underutilized species
- Pioneered extraction technologies for bioactive compounds

Collaboration & Partnerships

The division works with:

- Fish exporters and processors
- Food processing industry
- Ministry of Health food safety authorities
- Export Development Board
- University food science departments
- International food technology institutes

- HACCP certification bodies
- Pharmaceutical and nutraceutical industries
- Entrepreneur development organizations

Future Directions

- Expansion of accreditation scope for additional parameters
- Development of rapid testing methods
- Nanotechnology applications in food packaging
- Functional food development from marine resources
- Bioactive compound extraction for pharmaceutical applications
- Automated quality control systems
- Blockchain for traceability in fish value chains
- Climate-resilient post-harvest technologies
- Reduction of plastic use in fish packaging
- Integration with aquaculture product processing

Contact Information

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For laboratory testing services, product development consultation, or technology transfer inquiries, please contact the division directly.