

FPT- 501, Low Temperature Preservation of Fish and Shell Fish (2+1)

Theory

Sl. No	Topic	No of Lecture	Name of course instructor
1.	Postmortem changes: Structural and chemical features of fish and shellfish as raw material for processing.	1	Dr. Pooja Saklani
2.	Factors affecting quality of fresh fish- intrinsic and extrinsic factors.	1	
3.	Handling of fish onboard, landing centres and farm sites	1	
4.	Different types of chilling methods, depuration of bivalves. Assessment of post-harvest loss	1	
5.	Chilled storage and transportation of fish: Heat load calculation and storage methods- insulated boxes and insulation thickness	1	
6.	Different types of ice, physical, chemical, microbiological and sensory changes during chill storage, melanosis and its prevention, iced storage shelf life, cold shock.	1	
7.	Transportation- live fish/shell fish, transportation of raw fish to local markets and processing centres	1	
8.	Improvements needed in transportation, refrigerated transport systems, classification of transport vehicles, cold chain.	1	
9.	Freezing of fish and shellfish: Structure of water and ice, influence of solutes on the structure of water and ice, phase equilibria and freezing curves of pure water and binary solutions,	2	

10.	Freezing curves for fish, determination of freezing points from time-temperature plots, calculation of freezing time; crystallization, nucleation- homogeneous and heterogeneous nucleation; super cooling, crystal growth, eutectic point, location of ice crystals in tissue, changes during freezing	2	
11.	Freezing methods: Technological aspects of freezing-methods of freezing (plate freezing, IQF, etc), selection of a freezing method, product processing and packaging, packing of fresh and frozen fish for consumers,	2	
12.	Modified atmosphere packaging, controlled packaging. Cold storage management-arrangements within a cold storage, handling and stacking systems	1	
13.	Changes in frozen storage: Physical changes, freezer burn and recrystallisation, different types of recrystallisation.	1	
14.	Chemical changes in lipids, proteins and nucleotides, freeze denaturation and theories on denaturation, changes in pH, bacterial changes, sensory changes, texture, taste, odour, effect of post-mortem condition on sensory qualities	1	
15.	Prevention of quality loss during frozen storage: Treatments prior to freezing, antioxidants, cryoprotectants and other additives, theories of cryoprotection, glazing-importance and methods	2	
Total		19	

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Practical

Sl.No	Topic	No. of practical	Course instructor
1.	Handling of fish, crustaceans and mollusks	1	Dr. Pooja Saklani
2.	Evaluation of freshness of fish	1	
3.	Evaluation of freshness of crustaceans and molluscs	1	
4.	Freezing curve	1	
5.	determination of freezing point	1	
6.	Filleting of fish, treatments, glazing, packaging, freezing	1	
7.	Processing of shrimp, lobster, squid, cuttle fish, crab etc. in different styles	2	
8.	Depuration-treatment with chemicals, Packaging and Freezing	1	
9.	Chemical tests (Histamine, k value) on frozen products and Studies on physical and sensory changes for determination of shelf life	1	
Total		10	