



FISH AND SEA FOOD PROCESSING: 32

CANNING AND IRRADIATION PROCESS

□ TECH. OF MEAT, POULTRY , FISH AND SEAFOOD PRODUCTS:

(Module No. 32)

Contents

- Introduction
- Fish Irradiation
- Fish Radurization
- Irradiation Doses
- Potential Application of Irradiations

Introduction:(Canning & Irradiation Process)

- The canning process is a sterilization technique that kills microorganisms already present on the fish, prevents further microbial contamination, and inactivates degradative enzymes.
- In this process fish are hermetically sealed in containers and then heated to high temperatures for a given amount of time.
- Canned fish can be stored for several years.
- In canning thermal conditions viz. exhausting and retorting at a temperature of 88°C & 121°C respectively causes death of microorganisms integrated with prevention of oxidative changes.

Introduction:(Canning & Irradiation Process)

- The most common types are tuna, salmon, herring, sardines, and shrimp. The thermal processing does not have a detrimental effect on the high-quality protein of the fish.
- The most common types are tuna, salmon, herring, sardines, and shrimp. The thermal processing does not have a detrimental effect on the high-quality protein of the fish

Fish Irradiation Processing

- ❑ Fish Irradiation is essentially non-thermal process of preserving fish because that treatment does not cause any significant raising temperature.
- ❑ Temperature of the product being irradiated as an influence on the radiation induced changes.
- ❑ Movement of free radicals increased with the temperature, affecting the overall rate of radiolysis lower temperature reduces the production of volatiles in food products

Fish Radurization

- Radurization is the application of irradiation to foods using a dose of ionizing radiation sufficient to enhance its keeping quality.
- This cause a substantial decrease in numbers of viable specific spoilage microorganisms.
- The required dose is in the range of 0.4 - 10 kGy for a range of food product.
- Radurization processes have been developed for variety of fishery products including marine fresh water and shell fish.

Irradiation Doses

- Reduction of spoilage microbes to improve shelf life of meat, poultry and seafood under refrigeration irradiation dose- 1.5-3.0 kGy
- Elimination of pathogenic microbes in fresh and frozen meat, poultry and seafood irradiation dose - 3 - 7 kGy

Potential Application of Irradiations

- Under refrigeration conditions shelf life extension of fresh fish and elimination of pathogens in fresh and frozen seafood's observed.
- Individually Quick Frozen (IQF) shrimp and reductions of pathogens including Hepatitis A virus, from oysters recorded with the application of irradiations.
- Development of shelf stable products from fish.
- Removal of off odors from some species of lobsters and oysters.
- Reduction in fecal coli forms in live hard shell clams.
Hygienization of fishmeal

Future Reading

- Casares et al., 2005, J.J. Casares, P.M. Bello, M.T. Torres, S. Pombo, J.M. Álvarez-Campana, A. García, J. Santamarina. **Environmental Permit: Application Guide for the Fish and Shellfish Canning Industry**, Department of Environment – Xunta de Galicia, Santiago de Compostela (2005) (in Galician) 1–83
- <http://www.fao.org/DOCREP/003/T0007E/T0007E00.HTM>
- Aubourg, A.P. (2001) Review: Losses of quality during the manufacturing of canned fish products. *Food Science and Technology International*, 7, 199-215
- Myrseth, A. (1985) planning and Engineering Data 2. Fish Canning. *FAO Fisheries Circular No. 784*, FAO of United Nations.