



# FISH AND SEA FOOD PROCESSING: 31

## SMOKING, PICKLING, SALTING & MARINATION

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

**(Module No. 31)**

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## **Introduction:**(Fish and Sea Foods)

- ❑ The preservation of fish has been an integral part of every seafaring culture.
- ❑ Fish is a highly perishable food which needs proper handling and preservation.
- ❑ For a long shelf life, better quality and nutritional value over the course of thousands of years drying, salting and smoking technique of fish the has been.
- ❑ Cold smoking requires temperatures below 80°F. for several days. Hot smoking however can be done at temperatures of up to 250°F. and only takes a few hours

## Contd.

- ❑ The control of temperature using ice, refrigeration or freezing used to preserve fish and fish products )
- ❑ The control of water activity by drying, salting, smoking or freeze-drying.
- ❑ The physical control of microbial loads through microwave heating or ionizing irradiation
- ❑ The chemical control of microbial loads by adding acids
- ❑ Oxygen deprivation, such as vacuum packing.

# Fish Smoking

- **Smoked fish** have been cured by smoking " Smoking, one of the oldest preservation methods, combines the effects of salting, drying, heating and smoking. Typical smoking of fish is either cold (28–32°C) or hot (70–80°C)..



# Smoke Houses

- Fish or meat is cured with smoke in houses known as smoke house. In a traditional fishing village, a smokehouse was often attached to a fisherman's cottage.
- The smoked products might be stored in the building, sometimes for a year or more. Traditional smokehouses served both as smokers and to store the smoked fish.
- Fish could be preserved if it was cured with salt and cold smoked for two weeks or longer. Smokehouses were often secured to prevent animals and thieves from accessing the food.

# Fish Pickling

- Preserving Seafood with acid, usually vinegar (acetic acid) or citrus juices (citric acid) is one of the earliest food preservation techniques known.
- Pickling is an easy method of preserving fish. Pickled fish must be stored in the refrigerator at no higher than 40<sup>0</sup>F (refrigerator temperature), and for best flavor must be used within four to six weeks.
- Few species of fish are preserved commercially by pickling, but almost any type of fish may be pickled at home.
- Refrigerate the fish during all stages of the pickling process.

# Salting

- Salting is the preservation of food with dry edible salt. It is related to pickling (preparing food with brine, i.e. salty water).
- It is one of the oldest methods of preserving food, and two historically significant salt-cured foods are dried and salted cod.
- Salting is used because most bacteria, fungi and other potentially pathogenic organisms cannot survive in a highly salty environment, due to the hypertonic nature of salt.
- Any living cell in such an environment will become dehydrated through osmosis and die or become temporarily inactivated.



# Marination

- ❑ Marination is the process of soaking foods in a seasoned, often acidic, and liquid before cooking. Marinating fish adds flavor and moisture to the flesh.
- ❑ The word alludes to the use of brine (*aqua marina*) in the pickling process, which led to the technique of adding flavor by immersion in liquid.
- ❑ The 'marinade', can be either acidic, (made with ingredients such as vinegar, lemon juice, or wine) or enzymatic (made with ingredients such as pineapple or papaya).
- ❑ Marinades include oil (extra virgin olive oil provides the best flavor) and an acidic ingredient like chopped tomatoes, red wine vinegar, or lemon juice, along with seasonings including salt and pepper.

# Future Reading

- Clifford, MN, SL Tang, and AA Eyo. 1980. Smoking of foods. *Process Biochemistry*, 15, pp. 8, 10, 11, 17, 26.
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- Stohr, V, JJ Joffraud, M Cardinal, and F Leroi. 2001. Spoilage potential and sensory profile associated with bacteria isolated from cold-smoked salmon. *Food Research International*, 34, pp. 797-806.