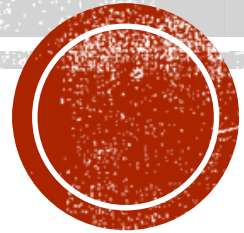
SALTING TECHNOLOGY



6. Week

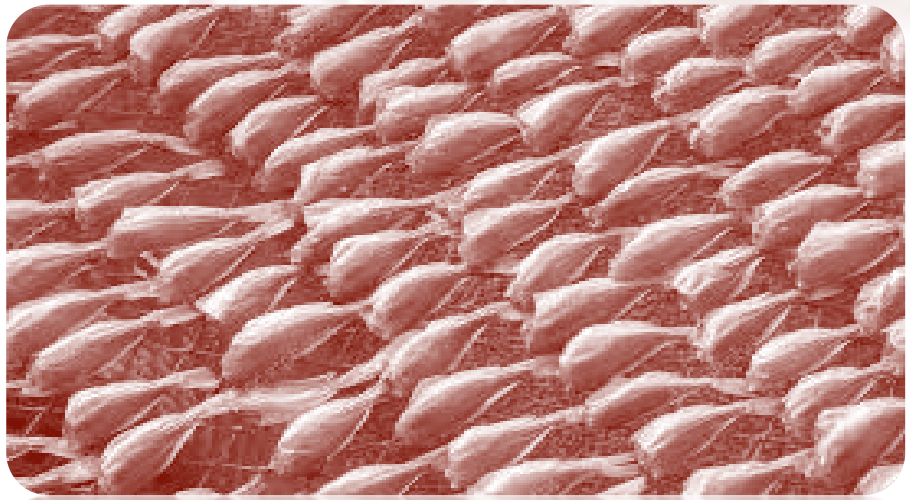
Salting;

Preservation in these products is accomplished by the inhibiting action on micro-organisms and enzymes of both high salt concentration and the considerable dehydration that accompanies processing.

Factors affecting salting

- Salting method,
- Salt concentration,
- Salt quality,
- Characteristics of raw material,
- Salting temperature

Success in making a good quality product invariably depends upon achieving in the early stages a rapid enough increase in salt concentartion and in concomitant dehydration to prevent spoilage. Salting is a fairly slow process often conducted at ambient temperature. Salt penetration occurs from the outer layers so that for some period the inside of the fish will remain unsalted and of normal water content.



If neither salt penetration or rate of dehydration are sufficiently rapid, microorganisms on the inside will multiply and spoil the fish. To this end the salt needs to be brought into as intimate contact as possible with the fish flesh and if at all possible the fish should be kept cool throughout the early critical stages of salting. These principles have been known for centuries and are embodied in traditional methods such as splitting large fish to give an enlarged surface area from which the salt can diffuse to the centre of the flesh and pressing in stacks to aid rapid removal of water.

Characteristics of raw material

- All types of white fish can be dry salt cured, though elasmobranchs may give trouble with evolution of ammonia or amines unless the salting and drying processes are carried out quickly. Pelagic fish of different fat contents can be pickle-cured successfully but those with the highest fat content make the best products.

- The quality and type of the other raw material-salt- is a matter of some importance. It should be reasonably small grain size to facilitate close contact with the fish surfaces and rapid dissolution, but not so fine as to impede drainage of expelled flesh juices. Salt containing more than traces of iron or copper gives rise to unsightly yellowish or brownish colour in finished white fish products, it should be avoided.

- On the other hand, it should contain about 0.5% calcium plus magnesium (as sulphates) because these metals impart a desirable whiteness and rigidity, high concentrations are undesirable because they cause excessive bitterness and brittleness.

- Success in producing salt fish of consistent quality depends upon closely following traditional methods paying particular attention to the following points, the ratios of salt and fish that are required for end products possessing the correct degree of cure (salt and moisture content), adjustment of this ratio to take account of different sizes and thicknesses of fish, the method of splitting or gutting the fish, the method of stacking and restacking in the case of white fish or of packing in barrels or vats in the case of pelagic species, the ambient temperature, the method and degree of drying after salting.

Changes in salting products

- The aim in the salting stage is to obtain an even distribution of salt through the fish and therefore uniform sizes of fish should be stacked together or placed in the same region of the barrel or pickle container, also more solid salt should be placed near the thickest part of the fish. Air spaces should be avoided in order to reduce the risk of rancidity developing. In this connection, barrels or wooden containers used for holding fish and salt should be as airtight as possible, the entrance of air can cause the development of rancidity.

- Drying should be carried out as swiftly as possible to reduce the risk of spoilage. The humidity of the air needs to be low and the temperature as high as possible consistent with the avoidance of cooking and early case-hardening. Good control and rapidity of drying in humid, cool climates can be obtained by suspending the salted fish in a chamber through which warm air is passed. Salt fish can be dried out of doors in dry, warm climates but protection against rain, insects, birds and strong direct sunlight is necessary.