

LOSS OF WEIGHT IN DRY-SALTING OF FISH.

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The preservation of fish by salting is still the principal method used in many countries. Salt itself does not act so much as a preservative, but rather by removing water from the fish. By osmosis and probably also as a result of coagulation of proteins, although this question has not been settled, water exudes through the cell walls and salt passes in until equilibrium is attained and the concentration of salt within the cell is equal to that of the external brine. The water content is thus reduced to a point where bacterial and enzymatic actions are arrested or reduced to a very small rate.

The lowering of the water content in fish flesh resulting in a loss of weight depends on many factors such as the size, the freshness and the fat content of the fish. The author (1950) has previously shown that the fat content has very great effect on the rate of fish salting. This paper gives an account of investigations on the dry-salting of fish with various salt amounts.

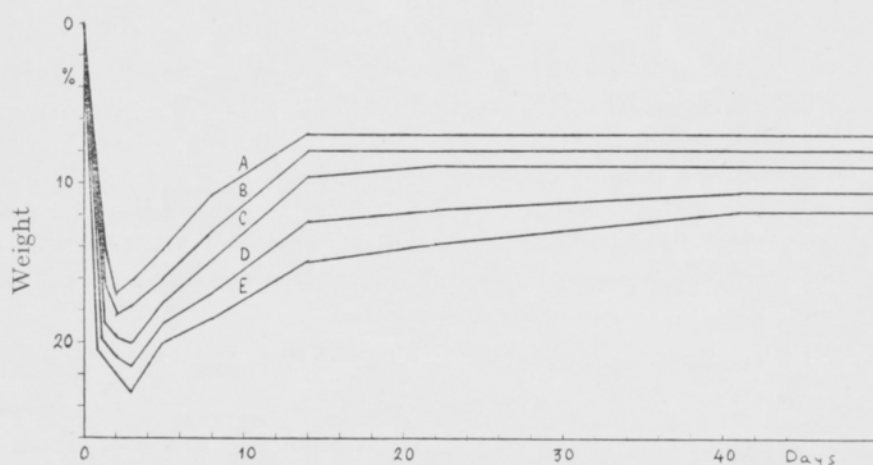


Fig. 1. Loss of weight in dry-salting.

Baltic herring treated with 10 kg. (A), 15 kg. (B), 20 kg. (C), 25 kg. (D), and 30 kg. (E) of sodium chloride per 100 kg. Storage temperature 10° C.

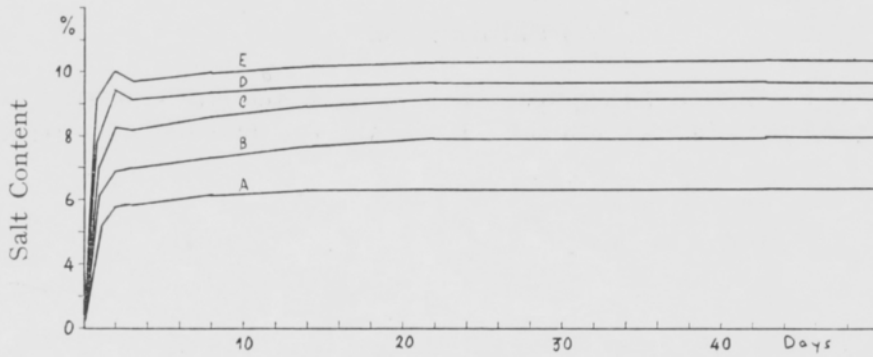


Fig. 2. Content of NaCl in fish flesh in dry-salting.

Baltic herring treated with 10 kg. (A), 15 kg. (B), 20 kg. (C), 25 kg. (D), and 30 kg. (E) of sodium chloride per 100 kg. Storage temperature 10° C.

Procedure.

Fresh Baltic herring (a variety of *Clupea harengus*) with an average fat content of 3.6 per cent and a mean weight of 34 g. (length 12—18 cm.) were salted with various amounts of dry salt and placed in barrels. The salt contents were 10, 15, 20, 25 and 30 kg. of common sodium chloride per 100 kg. of fish. The salted fish were stored at about 10°C and the loss in weight, the diffusion of salt into the fish flesh and the change in the concentration of salt in the brine were followed. Figs. 1 and 2 show the results.

Results and discussion.

The curves in Fig. 1 indicate that the loss of weight is the greater, the higher the ratio of salt to fish. The minimal weight is reached during 2 days when the fish were treated with 10 or 15 kg. salt per 100 kg. of fish, but 3 days were required with the higher salt ratios. The maximal weight losses with increasing salt ratios were as follows: 17.0, 18.4, 20.0, 21.6, and 23.2 per cent of the fresh weight. After this the weights begin to rise gradually. Fish treated with 10 or 15 kg. of salt per 100 kg. increases in weight during two weeks and attains a constant weight, which is 7 to 8 per cent less than its fresh weight. In the cases where the fish were stored with 20, 25, or 30 kg. of salt per 100 kg. constant weights were attained during a period of from 3 to 6 weeks, the weight losses being 9.0, 10.6 and 11.8 per cent of the fresh weight respectively.

Immediately after the beginning of the salt treatment, the content of sodium chloride in the fish tissue begins to rise rapidly, but increases later more evenly (Fig. 2).

Fish salted with 30 or 25 kg. of salt per 100 kg. of fish was of good quality. Fish prepared with 20 kg. of salt per 100 kg. and stored at 10°C was in satisfactory condition after two months, but when less salt was used, the fish deteriorated gradually, as shown by organoleptic and chemical tests.

On the basis of these results it is possible to calculate in advance the yield of salted fish (Baltic herring), and to determine when the salting has run to an end.

REFERENCES.

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SELOSTUS:

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Tässä työssä on seurattu painon sekä suola- ja kuiva-ainepitoisuuden muutoksia silakassa, joka on käsitelty eri suurilla määrillä (10, 15, 20, 25 ja 30 kg suolaa per 100 kg kalaa) ruokasuolaa. Piirrookset 1 ja 2 esittävät saatuja tuloksia.
