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SOME EXPERIMENTS CONCERNING FISH PROCESSING INTO MINCED PRODUCTS ABOARD THE ROMANIAN TRAWLERS

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ABSTRACT:

The paper presents the results of some experiments made aboard Romanian f shing vessels concerning minced fish meat processing. It was used small-sized fish which is industrial caught between mars-june 197 at the west African shore.

On the line of rational utilization of fishery raw products, a possibility occurs for obtaining fish minced meat from small sized species with low commercial value. The fish species caught in the Atlantic Ocean, along the African Coast, has a great alimentary importance, although on the Romanian market,where the oceanicfish is not quite usual, large sized fish is preferred; it is delivered as canned food or ready-made culinary articles, while small fish is used as fodder under the form of fish meal and fish oil.

There is a world-wide tendency to consume fresh or ready-to-cook products and to avoid the losses which result from preparing the fish for cooking at home, as much as possible.

Consequently, a new trend is developing in the research work for turning small fish to a better account under the form of

minced meat or other semi-products which can be delivered to the customers either as such, or as ingredients in different alimentary products, like sausages (3, 5).

MATERIAL AND METHODS

I have made some experiments concerning fish paste processing from three species of the southeast and eastcentral Atlantic Ocean: Trachurus capensis, Merluccius capensis and Sardinella eba, caught in March-June, 1978.

I used samples weighing 10 kg each-following the three stages: prerigor, rigor mortis and postrigor - in each species (see Table).

Fish paste processing consisted of the following operations.

The fish to be analysed was cleaned with sea water so as to remove the mucosities and other impurities.

Immediately after cleaning I removed the scales, then the heads and vicera.

By beheading and eviscerating, the head together with the brachial bones, the fins, viscera and gonads were all removed and the abdominal cavity was freed of the curdled blood and the black pellicle. The cutting of the small-sized fish was done obliquely from the head to the anal fin, thus the head with the brachial belt and abdominal cavity being separated from the dorsal muscles, which remained for the minced meat preparation (2, 5).

After cleaning the fish were excoriated, then boned and filletted.

The obtained fillet was rinsed in fresh water at the temperature of about 10°C. The clean fillet was ground with a mannually actioned machine, then it was freezed in 10 kg trays in a freezer with horizontal plates at -30°C - inside the pans, the temperature reached minus 18°C. After freezing each pan was three times glazed, then the pans were packed in polyetilene bags and stored at -22°C.

RESULTS AND DISCUSSION

The fish of the species Trachurus trachurus capensis were 18-22 cm long and weighed 65-97 g and the minced meat ratio

Table 1

Productivity obtained by minced fish meat processing some species which were industrially caught along the West African Coast in march-june, 1978 •

Species	Fishing area	Date of experiment	Fish stage	Length (cm)	Weight (g)	Number of fish	Total weight of sample	Minced meat g	Minced meat %	Losses, total g	Losses, total %
Trachurus trachurus capensis	South east Atlantic	May	Rigor-mortis	18-22 / 20	65-97 / 81	110	10.000	3.945	39.45	6.055	60.55
		April	Pre-rigor	18-22 / 20	70-92 / 81	106	10.000	4.210	42.10	5.790	57.90
			Post-rigor	18-22 / 20	68-94 / 81	110	10.000	3.800	38.00	6.200	62.00
Sardinella eba	East central Atlantic	June	Rigor-mortis	30-34 / 32	180-400 / 290	35	10.000	5.220	52.20	4.780	47.80
			Pre-rigor	31-34 / 32	170-325 / 247	37	10.000	5.530	55.30	4.470	44.70
			Post-rigor	30-34 / 32	210-390 / 300	34	10.000	5.715	57.15	4.285	42.85
Merluccius capensis	South east Atlantic	April	Rigor-mortis	27-39 / 33	125-400 / 262	36	10.000	4.400	44.00	5.600	56.00
		May	Pre-rigor	26-40 / 33	140-350 / 245	38	10.000	4.470	44.70	5.530	55.30
			Post-rigor	25-38 / 31	138-380 / 259	35	10.000	4.380	43.80	5.620	56.20

was between 38.oo % and 42.1o % (see Table 1).

I noticed that the fresher the fish, the less the losses at its processing. The fish in rigor mortis gave 39.45 % of minced meat, while in postrigor it gave 38.oo %.

I also noticed that the stage of the fish influences the minced meat quality as concerns colour, smell, taste, elasticity and adhesiveness. The processing technology is influenced by the same factor. The fish in prerigor stage is soft, its skinning and boning is rather difficult, the minced meat colour is rosy white and smells fresh, it has a high degree of elasticity and low adhesiveness.

The fish processing while in rigor mortis shows certain particular features: boning and skinning is easier, as the skin is thick and is easily separated from the muscles.

As for the postrigor fish, I noticed that the fillet for grinding had low consistence, was easily boned and skinned, its colour was rosy with brown nuances, its elasticity was lower, it was of higher adhesiveness and it had great losses of tissular liquid.

Of the species Sardinella eba, I processed fish 3o to 34 cm length, weighing between 17o and 4oo g; the minced meat ratio was between 52.2o % and 57.15 %.

Following the three stages, I noticed that is took long for the freshest fish to be processed, because the skin adhered to the muscles and the flesh was difficult to be boned.

The minced product was red coloured, it was good looking, it had a great degree of elasticity and low adhesiveness.

In the other two stages - rigor and postrigor - easier detachment of the skin and flesh was observed but the minced meat had different rheological qualities - the elasticity diminished and the adhesiveness increased. After some authors (2, 3, 4) the variable lipid content in this species influences the minced meat quality during its preservation.

Of the species Merluccius capensis caught in the southeast Atlantic Ocean, I processed specimens 25 to 4o cm long, weighing between 125 and 4oo g, with a minced meat proportion of 43.8o % to 44.7o %. The samples were rather difficulty processed, as the fish skin is thin and it is hard to detach it from the mus-

cles; the flesh is also difficult to detach from the bones, resulting rather important losses.

CONCLUSIONS

As a result of studying the possibilities to obtain minced meat from the enumerated species aboard the ships, I can say the following.

1. By processing Sardinella eba, the highest percent of minced meat was obtained, but the very variable lipid content, as a function of the season, calls for special conditions of packing and preservation.

2. The species Trachurus capensis produced less meat; as it is a fatty fish, the minced meat gets rancid after a longer time and its rheological qualities are very good.

3. The species Merluccius capensis gives minced meat with poor rheological qualities, which recommends its mixing with other species in order to improve its qualities.

4. When processed aboard vessels, the minced meat must be glazed in a thicker layer so as to reduce its dehydration as much as possible.

5. At the same time, while stored, the minced meat must be covered with polyetilene in order to avoid the contact with the air.

6. It is adequate that the minced meat should be preserved aboard the vessel in cases weighing 3o kg, at $-22^{o}C$.

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