DETERMINATION OF SHELF-LIFE OF *LAKERDA* (SALTED ATLANTIC BONITO) STORED AT 4°C

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ABSTRACT

The aim of this work was to determine the shelf life of *lakerda* (salted bonito), which is traditionally manufactured salted fish products and also very popular dishes in Turkey. Bonitos (Sarda sarda) were dry salted for 21 day at +4° C, ratio of fish to salt as 6:1 by weight. Salted fish remained in the liquid pickle formed by salt and the liquid extracted from the fish. After 21 days ripening period salted products were put in glass jars and fillet sunflower oil and stored +4° C. In order to determine of shelf life monthly samples were taken for sensorial, physico-chemical and microbial analysis. The obtained results show that shelf life of *lakerda* were determined 7 months.

INTRODUCTION

Salting is one of the oldest techniques for fish preservation, and is essentially intended to increase the shelf life of the product depressing water activity by means of dehydration and salt uptake by the fish muscle. However, the current demand for salted fish is driven more by the flavor of the product than for preservation purposes (Mujaffar and Sankat, 2005). It is used as commonly traditional method in some Mediterranean areas and tropical countries because of simplicity of the process, low production cost and its ability to be combined with other methods in order to satisfy consumer's habit and requirements (Berhimpon et al., 1991). In Mediterranean countries, the most common species used as salted fish are cod, bonito, anchovy and sardine (Fuentes et al, 2008). *Lakerda*, salted bonito (*Sarda sarda*), are very popular dishes traditionally manufactured in Turkey and Greece (Erkan et al., 2009) and it is generally consumed as a savory food. Nowadays, it is still prepared in the traditional way according to the original recipe. In the commercial production, sliced fishes are made using the dry or brine salted method and generally ripened at refrigerated temperature and storage in same conditions. The objective of this work was to determine the shelf life of *lakerda* stored at +4°C via sensorial, physico-chemical and microbial analysis





MATERIALS AND METHODS

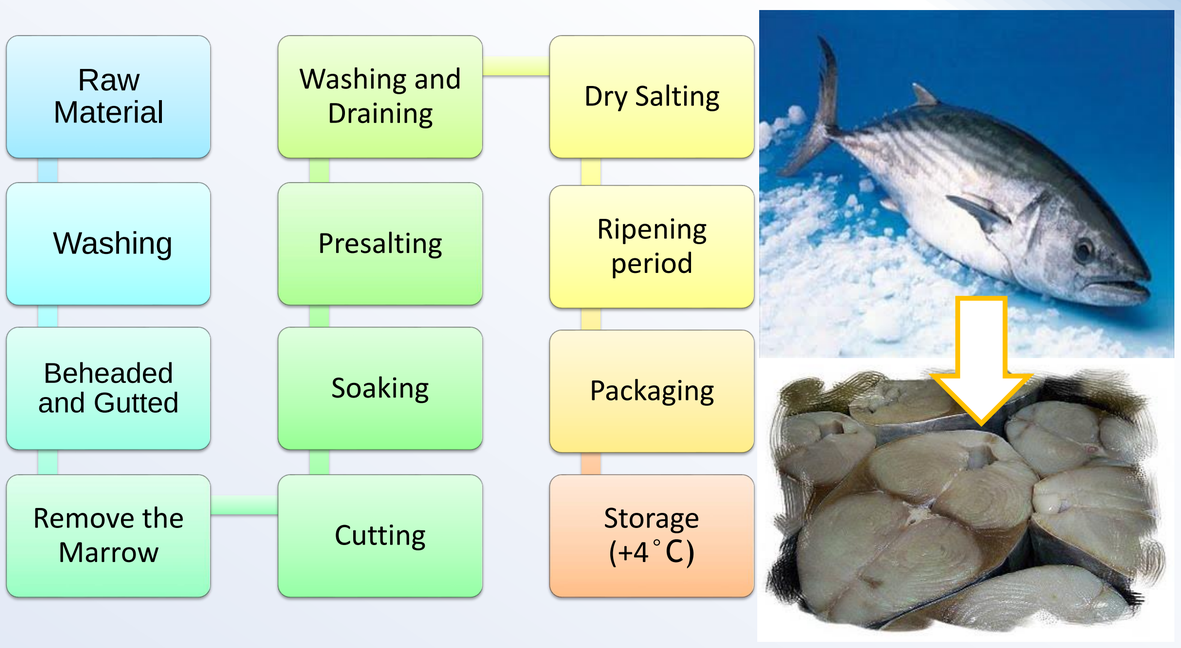


Figure 1. Flow sheet of manufacture and storage of *Lakerda*

- Totally 120 bonitos (*Sarda sarda*, Bloch 1793) were purchased in a local fish market.
- The bonitos were processing as Figure 1.
- The salted fishes were stored at 4 ± 1°C for 21 days for maturation.
- After ripening period salted products were put in glass jars and fillet sunflower oil and stored +4°C.
- Sensorial properties were measured by Define Shelf Life test.
- Physico-chemical changes were determined with pH, salt content, peroxide value, TBA, TMA-N
- Microbial changes were analyzed via total aerobic bacteria, halophylic bacteria, total coliform, fecal coliform, Enterococcus spp., Staphylococcus spp., Bacillus spp. and Clostridium spp

RESULTS

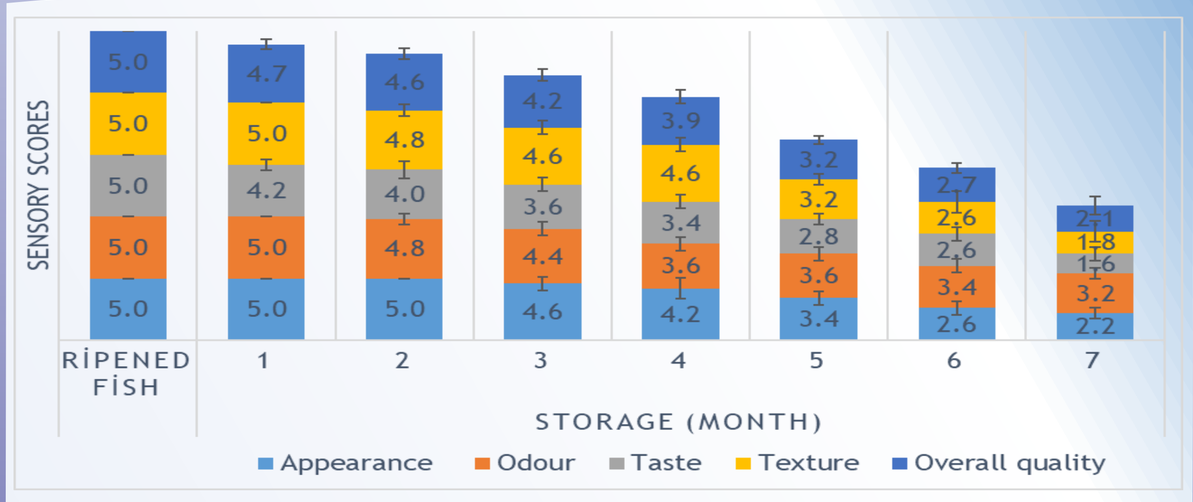


Figure 2. Changes of sensory panel results final product

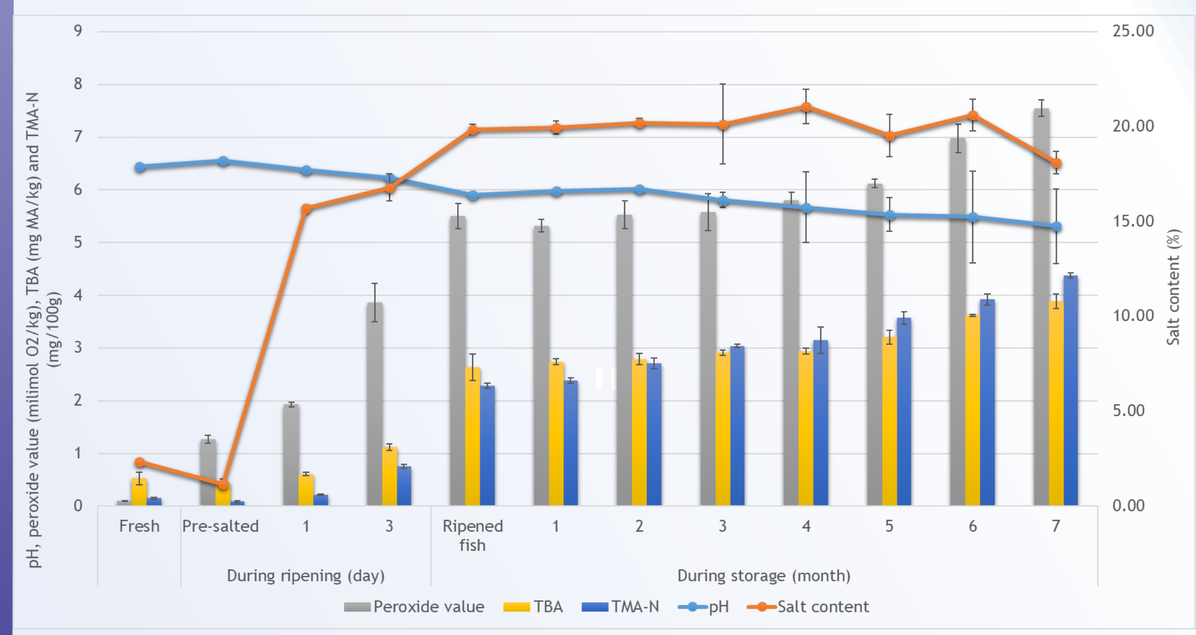


Figure 3. Physico-chemical changes of *lakerda* during storage

Table 1. Microbiological changes of *lakerda* during storage

Manufacturing process	Bacterial groups (cfu/g)							
	TAB	HB	TK	FK	*Ent.*	*Staph.*	*Bac.*	*Clost.*
Fresh	$2.5x10^4$	$1.5x10^2$	$1.7x10^3$	$1.0x10^2$	$4.0x10^1$	$5.5x10^3$	$2.4x10^3$	$7.0x10^2$
During salting (day)								
Pre-salted	$1.9x10^4$	$3.2x10^3$	$2.0x10^2$	$7.0x10^1$	$3.0x10^1$	$7.5x10^2$	$1.2x10^3$	$4.0x10^2$
3	$1.5x10^4$	$1.1x10^4$	$1.0x10^2$	$4.0x10^1$	$2.0x10^1$	$4.0x10^2$	$1.0x10^3$	$4.0x10^2$
During storage (month)								
Ripened fish	$3.1x10^4$	$4.0x10^4$	$<10^1$	$<10^1$	$4.0x10^2$	$9.0x10^2$	$1.8x10^2$	$1.0x10^3$
1	$3.8x10^3$	$4.6x10^2$	$<10^1$	$<10^1$	$<10^1$	$2.8x10^1$	$3.3x10^1$	$7.2x10^1$
2	$2.6x10^1$	$<10^1$	$<10^1$	$<10^1$	$<10^1$	$2.4x10^1$	$1.1x10^1$	$1.2x10^1$
3	$5.4x10^1$	$3.7x10^1$	$<10^1$	$<10^1$	$<10^1$	$2.8x10^1$	$1.4x10^1$	$2.2x10^1$
4	$3.4x10^2$	$2.1x10^1$	$<10^1$	$<10^1$	$<10^1$	$2.2x10^1$	$1.3x10^1$	$1.2x10^1$
5	$7.2x10^2$	$<10^1$	$<10^1$	$<10^1$	$<10^1$	$2.4x10^1$	$1.1x10^1$	$1.2x10^1$
6	$2.6x10^2$	$<10^1$	$<10^1$	$<10^1$	$<10^1$	$1.6x10^1$	$<10^1$	$<10^1$
7	$2.9x10^2$	$<10^1$	$<10^1$	$<10^1$	$<10^1$	$<10^1$	$<10^1$	$<10^1$

CONCLUSION

- ✓ After 7 months, result of sensorial analysis was determined below 2 point which means the products is inconsumable.
- ✓ Peroxide results were supported results of sensorial analysis.
- ✓ There were no micriobiological risk during storage period.
- ✓ The obtained results show that shelf life of *lakerda* were determined 7 months.

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