

1411 *Study*
USE OF SCREENED FISH RETAIL TABLE TO IMPROVE THE HYGIENE OF FISH SOLD IN LOCAL MARKETS.

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ABSTRACT

Screened retail table was designed to improve the hygiene of fish sold in our local markets. Investigation was carried out on the microbiological population on Tilapia fish. Overall value obtained from plate counts show that fish were more infested outside the table. The sensory values are 4, 13, and 6 for on-sport open table and screened respectively, also microbial load range between 7×10^5 to 88×10^5 cfu/g for open table where 3×10^{10} – 33×10^5 for screened table. This shows that fresh fish on open retail table in our markets were prone to deterioration.

Keywords: Retail table, screened, deterioration, sensory value.

INTRODUCTION

World catches of fish have increased in the 1970's and 1980's but seem to have stabilized since 1988 to just less than 100 million tons. As human population is ever increasing, it means that less fish will be available per output every year. Nevertheless, a large part of this valuable commodity is wasted. It has been estimated by FAO that post harvest losses (discards at sea and loss due to deterioration) remain at a staggering 25% of the total catch (FAO Technical paper 348).

Fresh fish handling procedure encompass all the operations aimed at maintaining food safety and quality of characteristic from the time fish is caught until it is consumed. In practice, it means reducing the spoilage rate as much as possible, preventing contamination with undesirable microorganisms, insect infestation and foreign bodies and avoiding physical damage of edible part. Moreso, to sustained and preserving the mineral composition of fresh fish.

Fish quality in terms of safety and keeping time is highly influenced by non-visible factor such as autolysis, contamination and growth of microorganisms (Huss 1995). These effects can only be assessed long after the damage has occurred.

Insect infestation during the display of fresh fish in our local market for sales also contribute to post harvest losses, often leave fish long enough outside for infestation by blowflies with oviposition (laying of eggs) on fresh fish (Eyo, 1977). As a result, the amount of fish available for human consumption is reduced, and of low quality.

Organism are found on all the outer surface (skin and gill) and in the intestine of live and newly caught fish. The total number of those organisms vary enormously, Listion (1980). Also it was observed that bacteria flora on newly-caught fish depends on the environment in which it is caught rather than on the fish species, Shewan (1977).

In order to reduce this losses and insect infestation, physical barrier (screen retail table) was design to prevent insect from gaining access to the fish.

MATERIALS AND METHODS

Screened fish retail table was constructed to improve the hygiene of fresh fish sold in our local markets. Samples were taken from this table and open market retail table as well as on-stop sampling. On sport physical analysis were conducted on these fishes. All the analysis was conducted using standard methods of analysis.

TABLE 1: RESULTS AND DISCUSSION

Sensory analysis

Characteristic of Tilapia.

Quality parameter	Characters	After catch	Open table	Screened table
General appearance	Skin	0	2	0
	Blood sport on gill cover	1	1	1
	Stiffness	0	1	1
	Bolly	1	2	1
	Smell	0	2	1
Eyes	Clarity	1	1	1
	Shape	0	1	0
	Colour	1	1	1
	Smell	0	2	0
Score		4	13	6

Larsen *et al.* (1992).

Table 2: Chemical Analysis.

	Moisture (%)	Ash (%)	Crude fat (%)	Crude protein	Dried matter (%)	Fibre (%)	NFE (%)	Peroxide value (Meg/kg)	Acid value (m mol)	Free fatty acid (%)
After catch	78.40	1.40	0.66	12.06	21.60	0.24	7.24	1.3	2.8	1.408
Open table	77.50	2.45	0.78	11.63	22.50	0.31	7.33	1.6	2.8	1.408
Screen table	77.10	1.65	0.77	13.00	22.90	0.27	7.21	1.4	2.8	1.408

Table 3: Microbial analysis

Plate count for fresh fish

	10^3	10^5	10^7	10^9	10^{11}	10^{10}
Open table	88	82	54	44	25	7
Screened table	33	26	18	10	8	3

IDENTIFICATION

- (i) *Esherichia coli*
- (ii) *Staphylococcus aureus*
- (iii) *Micrococcus spp.*
- (iv) *Aquaspirillum spp.*

The result in table 1 shows that the sensory evaluation of fish outside the table has higher value, this pointing towards deterioration. Although it has not reached 20 point classified as bad fish. Larson *et al.* (1992).

- (iv) There was no significant different in the chemical analysis of the fresh fish, this show that the chemical composition is still retained at this level. The microbial values shows marked differences, from 10^1 to 10^4 , the load were too numerous to count from $10^5 - 10^{10}$ cfu/g the result shows that the population of the bacteria found on the fish on the open retail table were more than that of the screened table. In the open table 88×10^5 cfu/g pointing towards spoilage.

In ice-stored Nile perch, the total count was 109 cfu/g for days before the fish was rejected. Gram *et al.* (1989). Moreso, these four bacteria (i) *Esherichia coli*, (ii) *Staphylococcus aureus* (ii) *Micrococcus spp.* (iv) *Aquaspirillum spp.* were found on the fishes both open and screened retail table.

This shows that bacteria flora on newly-caught fish depends on the environment in which it is caught rather than on the fish species, Shewan (1977).

Therefore, the use of screened retail table as a physical barrier to prevent insect infestation prove effective and it will go a long way to prevent deterioration of fresh fish in our local markets. It was also found out that screening anchory in a market could reduce beetle infestation, Madden *et al.* (1995).

REFERENCES

- FAO Fisheries Technical Paper – 348. Food and Agriculture Organization of the United Nation, 1995.