



QUALITY ASSESSMENT OF SOME FRESH FISH

A Thesis

**Presented to The post graduate school faculty
of veterinary medicine Alexandria University**

**In Partial Fulfillment of the
requirements for the Degree**

Of

Master of veterinary

In

Meat Hygiene

By

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((٢٠١١))



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أستاذ الرقابة الصحية على اللحوم ومنتجاتها

ورئيس قسم الرقابة الصحية على الأغذية

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الصحية على الألبان ومنتجاتها

Dedicated to



**My father
My mother
My husband
My Sons (Hamza
and Maryum)**

ACKNOWLEDGMENT

FIRST OF ALL MY DEEPEST THANKS TO OUR MERCIFUL GOD WHO GAVE ME THE POWER AND CHANCE TO FULFILL THIS WORK.

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\.Introduction

1. Introduction

"quality" refers to the aesthetic appearance and freshness or degree of spoilage which the fish has undergone. It may also involve safety aspects such as being free from harmful bacteria, parasites or chemicals. It is important to remember that "quality" implies different things to different people and is a term which must be defined in association with an individual product type. For example, it is often thought that the best quality is found in fish which are consumed within the first few hours post mortem. However, very fresh fish which are in rigor mortis are difficult to fillet and skin and are often unsuitable for smoking. Thus, for the processor, slightly older fish which have passed through the rigor process are more desirable.

The methods for evaluation of fresh fish quality may be conveniently divided into two categories: sensory and instrumental. Since the consumer is the ultimate judge of quality, most chemical or instrumental methods must be correlated with sensory evaluation before being used in the laboratory. However, sensory methods must be performed scientifically under carefully controlled conditions so that the effects of test environment, personal bias, etc., may be reduced.

In order to increase the level of much needed protein of teeming population in Egypt, there has been increased interest of fish, which has considered one of the most nutritive and highly desirable food stuffs due to its contribution of high quality protein, its exceptional richness in calcium and phosphorus and generous supply of B-complex vitamins as well as its lower content of cholesterol.

Fish and fish products are important source of high quality protein, its exceptional richness in calcium and phosphorus and its generous supply of B-complex vitamins as well as the cheapest source especially in Egypt where the animal protein is insufficient to meet the requirements of population.

Environmental conditions may affect the growth and multiplication of various kinds of micro-organisms, particularly in fish which may be contaminated through the aquatic environment (**Yousef et al.**, 1985).

Fresh water fish act as a vehicle for many types of micro-organisms especially those responsible for food poisoning and spoilage. The chief sources of contamination of the fresh water fish are water, soil and workers (**EL-Mossalami and Wassef**, 1971, **Yousef et al.**, 1981 and **Hefnawy et al.**, 1989a).

The fish flesh, which is the main edible part, is generally sterile immediately after catching, however, it may become contaminated with different micro-organisms during subsequent handling as these micro-organisms can penetrate from skin and the gut to the flesh (**Brock et al.**, 1984 and **Etzel et al.**, 1998). Generally, fresh water fish are subjected to many risks of contamination from various sources either during their presence in aquatic environment or after being harvested till they reach consumers (**Fattal et al.**, 1992).

In Alexandria, raw fresh water fish are common in markets, but they are marketed without inspection or quality control. So fish are subjected to contamination from each other by keeping the all fish species in the same containers or vessels before classifying it into different species and / or washing all fish species by dipping in the same water vessel without disinfecting or washing the vessel.

Unlike meat and poultry, fish are more liable to contamination with pathogenic bacteria from animal / human reservoir which may contaminate the water depending on the fishing area and also may be further contaminated during handling and processing. While the muscle flesh of living fish, which is the main edible part is normally sterile but microorganisms can penetrate from the skin and the gut to the flesh (**FAO**, ١٩٨٣). The penetration and contamination increase in cases of fish caught from polluted areas where there are high densities of bacteria (**Howgate**, ١٩٩٨). So that many investigators are convinced that fish from polluted environment may be passive carriers of bacteria and fungi pathogenic to man (**Ghittino**, ١٩٧٢ and **Varnam and Evans**, ١٩٩١). Furthermore, fish can act as a source of many bacterial infection occasionally of epidemic characters when they were inadequate and unhygienically handled, processed, stored, distributed and prepared for consumption (**El-Gohary and Samaha**, ١٩٩٢).

On the other side, the presence of Enterobacteria has an epidemiological interest as some of its members are pathogenic and may result in serious infections and food poisoning (**Varnam and Evans**, ١٩٩١). Examples of such serious pathogens include *E.coli*, *Salmonella*, *Vibrio parahaemolyticus*, and *Yersinia enterocolitica* organisms.

Fungal contamination of farm fishes is considered the main cause of spoilage which leads to off flavour and unpalatable taste and may constitute a public health hazard as well as many economic losses. Also, fungi were reported to be responsible for many fish diseases.

Considering all these hazards, farm fishes should not be subjected to unnecessary contamination and they should be free from such serious pathogens to ensure a maximum margin of consumer safety.

The mould count is used as an index of the proper sanitation and high quality products. Mould can assist in the putrefactive processes and in other cases; they may impart a mouldy odor and taste to food stuffs. Also mould can grow over an extremely wide range of temperature, therefore one can find mould on particularly all foods at almost any temperature under which foods are held. Besides, mould can assist in the putrefactive processes and may produce toxic substances namely mycotoxins which are harmful to man and animals (**Frazier and Westhoff**, ١٩٨٣).

Yeast normally play a small role in spoilage because they constitute only a small portion of the initial population, grow slowly in comparison with most bacteria and their growth may be limited by metabolic substances produced by bacteria. Spoilage yeasts find their way into food being widely

distributed in nature resulting in undesirable changes in physical appearance of food (**Walker, ١٩٧٦**)

So, this study is aimed to give an impression about the hygienic quality of the fish, the standard of hygiene during handling and processing, and the possible presence of bacteria or organisms of public health significance (**FAO, ١٩٨٨**).

Hence the presented study was planned to investigate the following:

A- Sensory evaluation of some fresh fish

B-Chemical evaluation of some fresh fishes as pH and T.V.N

C-Microbial evaluation of some fresh fish include:.

١- Total mesophilic bacterial count

٢- Total enterobacteriaceae count

٣- Total coliforms count

٤- Total Staphylococcal count

٥- Total Mould and Yeast count